

## TECHNICAL SPECIFICATION

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PROJECT                    **NEW TEACHING BLOCK AND INTERNAL ALTERATIONS**

For

**SANDFORD HILL PRIMARY SCHOOL**

JOB No:                    **2462**

DATE:                      **MARCH 2019 – Tender Issue**

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Revision:

DATE:

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## **D20 EXCAVATING AND FILLING**

To be read with Preliminaries/ General Conditions.

### **10 PREPARATORY WORK**

- Trees, shrubs and hedges to be removed: Cut down, grub up main roots and fill voids.
  - Larger trees: As per proposed soft landscaping scheme and demolition drawing.
- Trees to be retained: Protect area around the trunk and do not use for building purposes or material storage.
- Size of area: Circle around each tree of radius 4 times trunk girth, measured 1.5 m above ground level.
  - Clear site of rubbish and vegetation. Grub up large roots.
  - Arisings: Remove from site.

### **20 STRIPPING TOPSOIL**

- General: Excavate from areas where there will be re-grading or construction work.
  - Depth of removal: 300 mm.

### **25 INSPECTING FORMATIONS**

- Notice: Make advance arrangements for inspection of formations for foundations and filling and service trenches.

### **53 WATER**

- General: Keep excavations free from water until foundations and below ground constructions are completed.

### **55 PLACING FILL GENERALLY**

- Excavations and areas to be filled: Free from loose soil, rubbish and standing water.
- Freezing conditions: Do not use frozen materials or materials containing ice. Do not place fill on frozen surfaces.
- Fill against structures, membranes or buried services: Place and compact in a sequence and manner which will ensure stability and avoid damage.

### **60 BACKFILLING AROUND FOUNDATIONS**

- Under oversite concrete and pavings: Hardcore.
- Under grassed or landscaped areas: Material excavated from the trench, laid and compacted in 300 mm layers.

### **65 HARDCORE**

- Fill: Granular material, free from harmful matter and excessive dust or clay, well graded, all pieces less than 75 mm in any direction, and in any one layer only one of the following:
  - Crushed hard rock or quarry waste.
  - Crushed concrete, brick or tile, free from plaster.
  - Gravel or hoggin.
- Filling: Spread and level both backfilling and general filling in layers not exceeding 150 mm. Thoroughly compact each layer.

75 BLINDING TO HARDCORE

- Surfaces to receive sheet overlays or concrete: Blind with:
- Concrete where shown on drawings; or
- Sand, fine gravel, or other approved fine material applied to provide a closed smooth surface.
  - Permissible deviation on surface level: +0 -25mm.

## **G20 CARPENTRY/ TIMBER FRAMING FIRST FIXING**

To be read with Preliminaries/ General conditions.

### **GENERAL**

#### **105 TIMBER PROCUREMENT**

- Timber (including timber for wood based products): Obtained from well managed forests/ plantations in accordance with:
  - The laws governing forest management in the producer country or countries.
  - International agreements such as the Convention on International Trade in Endangered Species of wild fauna and flora (CITES).
- Documentation: Provide either:
  - Documentary evidence (which has been or can be independently verified) regarding the provenance of all timber supplied, or
  - Evidence that suppliers have adopted and are implementing a formal environmental purchasing policy for timber and wood based products.

#### **150 STRENGTH GRADING OF TIMBER**

- Grader: A company currently registered under a third party quality assurance scheme operated by a certification body approved by the UK Timber Grading Committee.

#### **160 GRADING AND MARKING OF SOFTWOOD**

- Timber of a target/ finished thickness less than 100 mm and not specified for wet exposure: Graded at an average moisture content not exceeding 20% with no reading being in excess of 24% and clearly marked as 'DRY' or 'KD' (kiln dried).
- Timber graded undried (green) and specified for installation at higher moisture contents: Clearly marked as 'WET' or 'GRN'.
- Structural timber members cut from large graded sections: Regraded to approval and marked accordingly.

### **PRODUCTS**

#### **210 STRUCTURAL SOFTWOOD (GRADED DIRECT TO STRENGTH CLASS)**

- Grading standard: To BS 4978, BS EN 14081-1, or other national equivalent and so marked.
- Strength class to BS EN 338:

#### **230 STRUCTURAL SOFTWOOD (STRENGTH CLASS NOT SPECIFIED)**

- Species: Contractors choice
- Grading standard: To the appropriate standard or rules for the specified grade and so marked.
  - Grade: Contractor to confirm

#### **347 STRUCTURAL INSULATED ROOF PANELS**

- Manufacturer: Contractors choice

#### **348 STRUCTURAL INSULATED WALL PANELS**

- Manufacturer: Contractors choice

## WORKMANSHIP GENERALLY

- 401 CROSS SECTION DIMENSIONS OF STRUCTURAL SOFTWOOD AND HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are target sizes as defined in BS EN 336.
  - Tolerances: The tolerance indicators (T1) and (T2) specify the maximum permitted deviations from target sizes as stated in BS EN 336, clause 4.3:
    - Tolerance class 1 (T1) for sawn surfaces.
    - Tolerance class 2 (T2) for further processed surfaces.
- 402 CROSS SECTION DIMENSIONS OF NON-STRUCTURAL SOFTWOOD
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
  - Maximum permitted deviations from finished sizes: As stated in BS EN 1313-1:
    - Clause 6 for sawn sections.
- 403 CROSS SECTION DIMENSIONS OF NON-STRUCTURAL HARDWOOD
- Dimensions: Dimensions in this specification and shown on drawings are finished sizes.
  - Maximum permitted deviations from finished sizes: As stated in BS EN 1313-2:
    - Clause 6 for sawn sections.
    - Clause NA.3 for further processed sections.
- 420 WARPING OF TIMBER
- Bow, spring, twist and cup: To Trada guidance
- 430 SELECTION AND USE OF TIMBER
- Timber members damaged, crushed or split beyond the limits permitted by their grading: Do not use.
- 435 NOTCHES, HOLES AND JOINTS IN TIMBER
- Notches and holes:
    - General: Avoid if possible.
    - Sizes: Minimum needed to accommodate services.
    - Position: Do not locate near knots or other defects.
    - In same joist: Minimum 100 mm apart horizontally.
    - Notches in joists:
      - Position: Locate at top. Form by sawing down to a drilled hole.
      - Depth (maximum): 0.15 x joist depth.
      - Distance from supports: Between 0.1 and 0.2 x span.
    - Holes in joists:
      - Position: Locate on neutral axis.
      - Diameter (maximum): 0.25 x joist depth.
      - Centres (minimum): 3 x diameter of largest hole.
      - Distance from supports: Between 0.25 and 0.4 of span.
    - Notches in roof rafters, struts and truss members: Not permitted.
    - Holes in struts and columns: Locate on neutral axis.
      - Diameter (maximum): 0.25 x minimum width of member.
      - Centres (minimum): 3 x diameter of largest hole.
      - Distance from ends: Between 0.25 and 0.4 of span.
  - Scarf joints, finger joints and splice plates: Do not use without approval.
- 440 PROCESSING TREATED TIMBER
- Cutting and machining: Carry out as much as possible before treatment.
  - Extensively processed timber: Retreat timber sawn lengthways, thickness, planed, ploughed, etc.
  - Surfaces exposed by minor cutting/ drilling: Treat with two flood coats of a solution recommended by main treatment solution manufacturer.

450 MOISTURE CONTENT

- Moisture content of wood and wood based products at time of installation: Not more than:
  - Covered in generally unheated spaces: 24%.
  - Covered in generally heated spaces: 20%.
  - Internal in continuously heated spaces: 20%.

510 PROTECTION

- Generally: Keep timber dry and do not overstress, distort or disfigure sections or components during transit, storage, lifting, erection or fixing.
- Timber and components: Store under cover, clear of the ground and with good ventilation. Support on regularly spaced, level bearers on a dry, firm base. Open pile to ensure free movement of air through the stack.
- Trussed rafters: Keep vertical during handling and storage.

520 EXPOSED END GRAIN PROTECTION

- Components: Seal exposed end grain before delivery to site.
- Sealer: Contractors choice

530 PAINTED FINISHES

- Structural timber to be painted: Primed as specified before delivery to site.

540 CLEAR FINISHES

- Structural timber to be clear finished: Keep clean and apply first coat of specified finish before delivery to site.

550 EXPOSED TIMBER

- Planed structural timber exposed to view in completed work: Prevent damage to and marking of surfaces and arrises.

**JOINTING TIMBER**

570 JOINTING/ FIXING GENERALLY

- Generally: Where not specified precisely, select methods of jointing and fixing and types, sizes and spacings of fasteners in compliance with section Z20.

580 FRAMING ANCHORS

- Manufacturer: Contractors choice
  - Fasteners: Galvanized or sherardized square twist nails.
  - Size: Not less than size recommended by anchor manufacturer.
- Fixing: Secure using not less than the number of nails recommended by anchor manufacturer.

615 BOLT/ SCREW ASSEMBLIES

- Designation: As per manufacturers standard details
- Nuts and washers: Material grade and finish to suit bolts
- Washer dimensions: Diameter/ side length of washers in contact with timber faces to be minimum 3 times bolt diameter, with a thickness not less than 0.3 times bolt diameter.

630 BOLTED JOINTS

- Bolt spacings (minimum): To BS EN 1995-1-1, section 8.5.
- Holes for bolts: Located accurately and drilled to diameters as close as practical to the nominal bolt diameter and not more than 2 mm larger.
- Washers: Placed under bolt heads and nuts that would otherwise bear directly on timber. Use spring washers in locations which will be hidden or inaccessible in the completed building.

- Bolt tightening: So that washers just bite the surface of the timber. Ensure that at least one complete thread protrudes from the nut.
  - Checking: At agreed regular intervals up to Completion. Tighten as necessary.

#### 670 ANTI-CORROSION FINISHES FOR FASTENERS

- Galvanizing: To BS 7371-6, with internal threads tapped and lightly oiled following treatment.
- Sherardizing: To BS 7371-8, Class 1.
- Zinc plating: To BS EN ISO 4042 and passivated.

### **ERECTION AND INSTALLATION**

#### 760 TEMPORARY BRACING

- Provision: As necessary to maintain structural timber components in position and to ensure complete stability during construction.

#### 770 ADDITIONAL SUPPORTS

- Provision: Position and fix additional studs, noggings and/ or battens to support edges of sheet materials, and wall/ floor/ ceiling mounted appliances, fixtures, etc. shown on drawings.
- Material properties: Additional studs, noggings and battens to be of adequate size and have the same treatment, if any, as adjacent timber supports.

#### 780 WALL PLATES

- Position and alignment: To give the correct span and level for trusses, joists, etc.
- Bedding: Fully in fresh mortar.
- Joints: At corners and elsewhere where joints are unavoidable use nailed half lap joints. Do not use short lengths of timber.

#### 784 JOISTS GENERALLY

- Centres: Equal, and not exceeding designed spacing.
- Bowed joists: Installed with positive camber.
- End joists: Positioned approximately 50 mm from masonry walls.

#### 786 JOISTS ON HANGERS

- Hangers: Bedded directly on and hard against supporting construction. Do not use packs or bed on mortar.
- Joists: Cut to leave not more than 6 mm gap between ends of joists and back of hanger. Rebated to lie flush with underside of hangers.
- Fixing to hangers: A nail in every hole.

#### 795 TRIMMING OPENINGS

- Trimmers and trimming joists: When not specified otherwise, not less than 25 mm wider than general joists.

#### 840 STRUTTING TO FLOOR JOISTS

- Type: One of the following:
  - Herringbone strutting: At least 38 x 38 mm softwood.
  - Solid strutting: At least 38 mm thick softwood and at least three quarters of joist depth.
  - Proprietary metal strutting: Contractors choice
- Fixing: Between joists as follows:
  - Joist spans of 2.5 to 4.5 m: One row at centre span.
  - Joist spans over 4.5 m: Two rows equally spaced.
  - Strutting must not project beyond top and bottom edges of joists.
- Outer joists: Blocked solidly to perimeter walls.



910 EAVES SOFFIT VENTILATION

- Soffit boards: Fixed to leave a continuous ventilation opening for full length of eaves.
- Insect mesh: 3–4 mm mesh screen fixed across the opening to prevent large insect entry.

950 FASCIAS/ BARGES/ SOFFITS

- Manufacturer: Contractors choice
- Installer: A contractor approved by the system manufacturer.

**J40 FLEXIBLE SHEET WATERPROOFING/ DAMP PROOFING**

To be read with Preliminaries/ General Conditions.

**TYPES OF TANKING/ DAMP PROOFING**

120 LOOSE LAID POLYETHYLENE DAMP PROOFING

- Manufacturer: Contractor's Choice

**WORKMANSHIP**

310 WORKMANSHIP GENERALLY

- Condition of substrate:
  - Clean and even textured, free from voids and sharp protrusions.
  - Moisture content: Compatible with damp proofing/ tanking.
- Air and surface temperature: Do not apply sheets if below minimum recommended by membrane manufacturer.
- Condition of membrane at completion:
  - Neat, smooth and fully supported, dressed well into abutments and around intrusions.
  - Completely impervious and continuous.
  - Undamaged. Prevent puncturing during following work.
- Permanent overlying construction: Cover membrane as soon as possible.

335 PRIMERS

- Manufacturer: Contractors Choice.
- Curing: Allow to dry thoroughly before covering.

340 HOT APPLIED BONDING COMPOUNDS

- Type: Oxidized bitumen.
- Application: Continuous even coating to provide full bonding over whole surface. Do not overheat.

345 COLD APPLIED BONDING COMPOUNDS

- Type and application: As recommended for the purpose by the membrane manufacturer.

350 ANGLES IN BONDED DAMP PROOFING/ TANKING

- Preformed rot proof fillet to internal angles:
  - Size (minimum): 50 x 50 mm, splay faced.
  - Bedding: Bitumen mastic or bonding compound.
- Reinforcing strip to all angles:
  - Material: As damp proofing/ tanking.
  - Width (minimum): 300 mm.
  - Timing: Apply before main sheeting.
- Dressing of main sheeting onto adjacent surfaces (minimum): 100 mm.

360 JUNCTIONS WITH PROJECTING DPCS/ CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpcs/ Cavity trays: Lap and fully bond/ seal with sheeting.

365 JUNCTIONS WITH FLUSH DPCS/ CAVITY TRAYS

- Adjoining surfaces: Clean and dry.
- Dpcs/ Cavity trays:
  - Expose edge where concealed.
  - Lap and fully bond/ seal sheeting to wall.
  - Dressing of sheeting beyond dpc/ cavity tray (minimum): 50 mm.

- 370 PREFORMED COLLARS FOR PIPES, DUCTS, CABLES, ETC.
  - Manufacturer: Contractors Choice.
  
- 380 PROTECTION BOARDS FOR DAMP PROOFING/ TANKING
  - Manufacturer: Contractors Choice.

## J42 SINGLE LAYER POLYMERIC SHEET ROOF COVERINGS

To be read with Preliminaries/ General Conditions.

### TYPES OF ROOF COVERING

#### 110 WARM ROOF COVERING

- Substrate Exterior Grade Ply Wood 18mm thick minimum
  - Preparation: Ensure decking is well secured with an even smooth, clean and dust free surface.
- Roof covering system: Manufacturer: SIG Design and Technology, Mannheim House, Gelders Hall Road, Shepshed, Leicestershire LE12 9NH.  
Tel: 01509 505714. Fax: 01509 505475.  
Email sales@sigdandt.co.uk Web: [www.singleply.co.uk](http://www.singleply.co.uk)

Product reference: Rhepanol® fk System.

- Lower protective layer (loose laid): Not required.
- Vapour control layer: PE 1000 gauge
- Insulation: Flat Board Approved by SIG Design and Technology
- Separating layer (loose laid): Not required.
- Waterproof membrane: Rhepanol® fk

Rhepanol® fk is a roofing membrane made from polyisobutylene (PIB), with a prefabricated self-sealing edge and an integrated synthetic fleece backing  
Rhepanol® fk Mechanically Fixed

With mechanical fastening the roof sealing is separated from the lower layers and components across the complete area. Movement of these layers and components can therefore not pass on stresses to the sealing, which is significant for the prevention of damage, especially on lightweight roofs.

Rhepanol® fk is rolled onto mechanically fastened Gripfix strips, providing optimal wind load distribution and securing the membrane permanently to the roof. Fixing plan provided by SIG Design and Technology

Rhepanol is supported by BBA Certification for a life of 30 years, has Life Cycle Assessment and FM Approval

Manufacturers insurance backed warranty for a 20 year period required

Width: Roll width: 1.05m / 0.65m / 0.52m / 0.35m

Roll length: 15m.

Thickness: 2.5 mm including polyester fleece backing.

Colour: Grey.

Weight: 3.0 kg/m<sup>2</sup>

- Upper protective layer not required: However allow for 25m<sup>2</sup> of Rhepanol walkway tiles

Accessories: Consult SIG Design and Technology technical literature for details.

### PERFORMANCE

#### 210 ROOF PERFORMANCE

- Roof covering: Secure, free draining and weather tight.

220 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS6229.
- Basic design data:
  - Outdoor notional psychrometric conditions, winter:  
Temperature: -5°C.  
Relative humidity: 90%.  
Vapour pressure: 0.36 kPa.  
Duration: 60 days.
  - Outdoor notional psychrometric conditions, summer:  
Temperature: 18°C.  
Relative humidity: 65%.  
Vapour pressure: 1.34 kPa.  
Duration: 60 days.
  
  - Indoor notional psychrometric conditions:  
Temperature: 20°C.  
Relative humidity: 70%.  
Vapour pressure: See technical data sheets.
- Winter interstitial condensate:
  - Calculated amount (maximum): 0.35 kg/m<sup>2</sup>.
  - Calculated annual net retention: Nil.
- Vapour control layer: If calculated amounts of condensate exceed allowed amounts, provide a suitable membrane or sealed deck so that damage and nuisance from interstitial condensation do not occur.

225 AVOIDANCE OF INTERSTITIAL CONDENSATION: WARM AND INVERTED ROOFS

- Determine: Interstitial condensation risk of roof construction as recommended in BS5250 Annex D.  
Vapour control layer if necessary provide a suitable membrane so that damage and nuisance from interstitial condensation do not occur.

230 INSULATION

- Requirement: Determine type and thickness of insulation and integral or separate overlay to satisfy the following criteria:
  - Thermal transmittance of the roof (maximum): 0.2 W/m<sup>2</sup>k.
  - Compressive strength of insulation (minimum) at 10% compression: 60 kPa.
  - Finished surface: Suitably even, stable and robust to receive roof covering.
  - Insulation compliance: To a relevant British Standard, or Agrément certified.

240 ATTACHMENT Euro code 1(GB), Part 2-4 from May 1995

- Requirement: Determine methods of attachment to resist wind loads. Provide for relative movement of materials and effects of vapour pressure. Do not reduce performance of Vapour control layer.
- Wind loads: Calculate to BS 6399-2, Standard Method consult SIG Design and Technology for this information

## PRODUCTS

### 330 TIMBER TRIMS, ETC

- Quality: Planed. Free from wane, pitch pockets, decay and insect attack except ambrosia beetle damage.
- Moisture content at time of covering (maximum): 22%.
- Preservative treatment: As recommended for purpose by waterproof covering manufacturer.

### 334 FIXINGS FOR INSULATION

- Type: Tube washer and Fixing
- Manufacturer: SIG Design and Technology, Mannheim House, Gelders Hall Road, Shepshed,  
Leicestershire LE12 9NH. Tel: 01509 505714. Fax: 01509 505475.  
Email: sales@sigdandt.co.uk Web: www.singleply.co.uk.
- Product reference: To be determined by roof build up

### 335 Bituminous reinforced VCL with an encapsulated impervious aluminum core sand faced

### 345 PERIMETER TRIMS

- Type: 0.6 mm galvanized steel with 0.5 mm unreinforced membrane laminate.
- Manufacturer: As roof covering.
  - Product reference: Rhepanol Drip Trim.
- Colour: Light grey.
- Size: As required.

### 355 MECHANICAL FASTENERS, WASHERS, PRESSURE PLATES, ETC

- Type: Plate Washer and Screw.
- Manufacturer: SIG Design and Technology, Mannheim House, Gelders Hall Road, Shepshed,  
Leicestershire LE12 9NH. Tel: 01509 505714. Fax: 01509 505475.  
Email: sales@sigdandt.co.uk Web: www.singleply.co.uk.

### 420 RIGID URETHANE FOAM WARM ROOF INSULATION

- Type: Rigid polyisocyanurate foam (PIR) roof board: To BS 4841-3.
- Manufacturer: Recticel
- Type: Eurodeck Foil/fFoil  
A CFC/HCFC-free rigid urethane insulation board faced on both sides with bonded wet lay coated glass fibre tissue, designed for use beneath mechanically fastened single-ply roofing.
- Type: Glass fibre foil faced rigid urethane insulation board.
- Density: 32-48 kg/m<sup>3</sup>.
- Thickness: As required.
- Facing: Foil.

### 480 PIPE COLLARS

- Manufacturer: As roof covering.
  - Product reference: Rhepanol f.
- Size: See Technical details.

## **EXECUTION GENERALLY**

### 510 ADVERSE WEATHER

- General: Do not lay membrane at temperatures below 5°C or in wet or damp conditions unless effective temporary cover is provided over working area.
- Unfinished areas of roof: Keep dry and protect edges of laid membrane from wind action.

### 520 INCOMPLETE WORK

- End of working day: Provide temporary seal to prevent water infiltration.
- On resumption of work: Cut away tail of membrane from completed area and remove from roof.

## **SUBSTRATES/ VAPOUR CONTROL LAYERS/ WARM ROOF INSULATION**

### 610 SUITABILITY OF SUBSTRATE

- Surfaces to be covered: Firmly fixed, clean, dry, smooth, free from frost, contaminants, voids and protrusions.
- Preliminary work: Complete, including
  - Grading to correct falls.
  - Formation of upstands, kerbs, box gutters, sumps, grooves, chases and expansion joints.
  - Fixing of battens, fillets and anchoring plugs/ strips.
- Moisture content and stability of substrate: Must not impair integrity of roof.

### 650 LAYING VAPOUR CONTROL LAYER

#### Setting out:

SIG Design and Technology Vapour control layer fk is applied with a seam overlap of 10cm, with the seams being sealed with connection or seam tape.

The vapour control layer must be taken up and flashed at connections and cappings, at roof penetrations it must be flashed.

### 680 LAYING WARM ROOF INSULATION

- Setting out:
  - Long edges: Fully supported and running at right angles to troughs in metal decking.
  - End edges: Adequately supported.
  - Joints: Butted together.
  - End joints: Staggered.
- Attachment: Fixed.
- Completion: Boards must be in good condition, well fitting and firmly fixed.

## WATERPROOF COVERINGS/ ACCESSORIES

### 730 WELDED JOINTING

- Laying: Loose lay, do not wrinkle or stretch.
  - Side and end joints:
    - Laps (minimum): Lap side joints not less than 50mm ensuring that the water will drain over and not into them.
- Clean the lower membrane below the overlap with Rhepanol Solvent Welding Agent. If the weather is cool or humid the seams should be cleaned section by section and mated before the solvent has evaporated.
- Remove the protective paper from the sealing edge and immediately apply pressure to the seam with the Rhepanol hand roller (taking care to avoid folds or pleats). The seams should then be firmly rolled with the Rhepanol universal roller.
- To prevent capillary action the corner of the lower roofing membrane is cut off before removal of the protective paper.

### 740 SEALING OF CROSS JOINTS:

A strip of Rhepanol cover tape, 100mm wide and long enough to overlap both seams by 50mm is cut and the corners rounded off. The cross joint is then cleaned with the Rhepanol Solvent Welding Agent.

To prevent capillaries a bead of Rhepanol paste (approx. 4mm thick) is applied to the membrane's edges, slightly longer than the width of the cover tape.

Apply the Rhepanol cover tape over the joint and allow to protrude 50mm to either side.

With the Rhepanol hand roller, and without stretching the tape, roll the tape at the T joint to and against the seam to remove all air bubbles whilst ensuring the paste is not squeezed from under the tape. Confine the paste by dabbing with moist thumbs.

- Preparation: Clean and dry surfaces for full width of joint.
- Sealing: Weld together.
- Condition at completion: Fully sealed, smooth, weatherproof and free draining.
- Accessories: As per SIG Design and Technology Technical Details.

### 760 PERIMETER OF MEMBRANE

- General: Secure membrane at roof edge conditions, changes of plane, kerb flashings, upstands to roof lights, etc. with mechanical fasteners.

### 775 PERIMETER DETAILS FOR ELASTOMERIC MEMBRANES

- Upstands, edge trims, drips, kerbs, etc: Preformed from waterproof membrane material.
- Reinforcing strip:
  - Lay at edge of horizontal roof plane.
  - Securing: Mechanically fasten.
- Roof membrane: Dress over perimeter profiles.
  - Sealing: Bond to substrate and to secured perimeter reinforcing strip.

### 785 ROOF PENETRATIONS THROUGH ELASTOMERIC MEMBRANES

- Roof membrane: Cut around penetrations.
- Flanged sleeve:
  - Type: Form from roof membrane complete with base flange.
  - Installation: Dress over and around penetration.
  - Seating: Flush to roof membrane.
  - Roof membrane overlap to flange (minimum): 75 mm beyond fasteners.
  - Sealing: Solvent weld.



## COMPLETION

### 910 INSPECTION

- Interim and final roof inspections: Submit roof covering manufacturer's reports.

### 920 ELECTRONIC ROOF INTEGRITY TEST: IF REQUIRED

- Testing authority: The roofing contractor.
- Timing of test: Prior to completion.
- Condition of roof prior to testing:
  - Waterproof membrane complete to a stage where integrity can be tested.
  - Surface: Clean.
- Test results and waterproof integrity certificate: Submit on completion of testing.

### 940 COMPLETION

- Roof areas: Clean.
  - Outlets: Clear.
- Work necessary to provide a weather tight finish: Complete.
- Storage of materials on finished surface: Not permitted.
- Completed membrane: Do not damage. Protect from traffic and adjacent or high level working.

## K10 PLASTERBOARD DRY LININGS/PARTITIONS/CEILINGS

To be read with Preliminaries/ General Conditions.

### GENERALLY/PREPARATION

- 127 METAL STUD PARTITION FORMING PARTITION/ WALL TYPE GENERALLY
- Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX  
Product reference: GypWall CLASSIC.  
Nominal thickness (excluding finishes): 97mm.
  - Performance criteria:  
Fire resistance to BS 476: Part 22: 30 minutes.  
Sound insulation: Rw 45 dB.  
Partition duty to BS 5234: Parts 1 and 2: Medium.  
Maximum height based on limiting deflection of L/240 at 200Pa: 3600mm.
  - Timber sole plate: 38mm (nominal) x channel width, if required.
  - Framing:  
Studs: Gypframe 70 S 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.  
Stud boxing: n/a.  
Floor channel: Gypframe 72 FEC 50 (*height up to 4200mm*), 72 DC 60 (*heights up to 8000mm*), 72 EDC 80 (*heights over 8000mm*).  
Head channel: As floor channel or as determined by deflection criteria.  
Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.  
Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
  - Head condition: Suitably fixed up to structural soffit.  
Deflection allowance: To be determined by a Structural Engineer.
  - Lining: One layer 12.5mm Gyproc SoundBloc (ACTIVair option available as clause K10/410), sheet width 1200mm, to both sides of framing.  
Fixing: As clause 591A.  
Screws: 25mm British Gypsum Drywall Screws.
  - Cavity insulation: 25mm Isover Acoustic Partition Roll (APR 1200).
  - Recycled content: Up to 86%.
  - Gyproc Sealant: As clause 516A.
  - Finishing: Taped seamless finish as clause 671A.
  - Accessories: Gyproc Profilex access panels as clause 531A – if required.  
Allow for pattressing for sanitaryware and wall mounted shelving and kitchen equipment etc as evident within tender documentation
- 130 METAL STUD PARTITION FORMING PARTITION WITH ENHANCED ACOUSTIC PROPERTIES
- Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX  
Product reference: GypWall CLASSIC.  
Nominal thickness (excluding finishes): 132mm.
  - Performance criteria:  
Fire resistance to BS 476: Part 22: 60 minutes.  
Sound insulation: Rw 57 dB.
  - Partition duty to BS 5234: Parts 1 and 2: Severe.  
Maximum height based on limiting deflection of L/240 at 200Pa: 4600mm.
  - Timber sole plate: 38mm (nominal) x channel width, if required.
  - Framing:  
Studs: Gypframe 70 S 50 at 600mm centres and Gypframe 70 S 50 at abutments, openings and junctions.  
Stud boxing: n/a.  
Floor channel: Gypframe 72 FEC 50 (*height up to 4200mm*), 72 DC 60 (*heights up to 8000mm*), 72 EDC 80 (*heights over 8000mm*).  
Head channel: As floor channel or as determined by deflection criteria.  
Fixing T: Gypframe GFT1 to support horizontal joints of single layer board linings.

- Fixing strap: Gypframe GFS1 to support horizontal joints in face layer of double layer board linings, or as an alternative to fixing T for single layer board linings.
- Head condition: Suitably fixed up to structural soffit.  
Deflection allowance: To be determined by a Structural Engineer.
  - Lining: Two layers 15mm Gyproc SoundBloc, sheet width 1200mm, to both sides of framing.  
Fixing: As clause 591A.  
Screws: 35mm British Gypsum Drywall Screws.
  - Cavity insulation: 2 x 25mm Isover Acoustic Partition Roll (APR 1200).
  - Recycled content: Up to 86%.
  - Gyproc Sealant: As clause 516A.
  - Finishing: 2mm Thistle Skim coat plaster (General use) as clause 681A (or) Taped seamless finish as clause 671A.
  - Accessories: Gyproc Profiflex access panels as clause 531A – if required.  
Allow for pattressing for sanitaryware and wall mounted shelving and kitchen equipment etc as evident within tender documentation
- 226 SUSPENDED CEILING ON METAL FRAMING FORMING CEILING TYPE GENERALLY
- Manufacturer: British Gypsum, East Leake, Loughborough, Leicestershire LE12 6HX  
Website: [www.british-gypsum.com](http://www.british-gypsum.com), Tel: 0115 945 6123, E-Mail: [bgtechnical.enquiries@bpb.com](mailto:bgtechnical.enquiries@bpb.com).  
Product reference: CasoLine MF.
  - Structural soffit: Hung from roof structure  
Fire resistance to BS 476: Part 21 or 22: n/a.  
Fire protection to steels BS 476: Part 23: n/a.  
Sound insulation: Airborne Rw 56 dB (Rw+Ctr 50 dB), Impact Lnw 68 dB.  
Sound Absorption Class: n/a.  
Cavity/Plenum depth: 240mm (min.)
  - Suspension system:  
Hangers: Gypframe MF8 Strap hanger or Gypframe FEA1 Steel angle fixed to soffit via Gypframe MF12 Soffit Cleats.  
Primary grid: Gypframe MF7 channels at 1200mm centres, suspended from hangers at 1200mm centres.  
Secondary grid: Gypframe MF5 sections at 450mm centres, fixed to primary grid with British Gypsum Wafer Head Jack-Point Screws or alternatively Gypframe MF9 clips.  
Perimeters: Gypframe MF6 channel.
  - Lining: One layer of 12.5mm Gyproc WallBoard.  
Fixing: As clause 591A.  
Screws: 25mm British Gypsum Drywall Screws.
  - Cavity insulation: n/a.  
Recycled content: n/a.
  - Gyproc Sealant: As clause 516A.
  - Finishing: Taped seamless finish as clause 671A.
  - Accessories: Access panels as required by M&E

## INSTALLATION

- 300 ENVIRONMENT – ISO14001: British Gypsum has ISO 14001 certification across the entire business including: mining, manufacture, distribution, and all ancillary services to support the business function.
- 301 ENVIRONMENT - BREEAM RATED PROJECTS: Prior to making any amendments to British Gypsum specifications consult with the design team responsible for the project for guidance. BREEAM (or similar environmental framework) ratings may be downgraded as a result of changes to this specification.

- 305 COMPLIANCE WITH PERFORMANCE REQUIREMENTS:
- Provide UKAS/NAMAS accredited laboratory test/assessment report(s) for the following:
  - All materials, components and details used must be in accordance with the test/assessment report(s). If discrepancies arise, obtain instructions.
- 345 ADDITIONAL SUPPORTS FOR PARTITION HEADS: Provide or ensure provision of accurately positioned and securely fixed framing to receive partition heads running parallel with, but offset from main structural supports.
- 355 ADDITIONAL SUPPORTS FOR FIXTURES AND FITTINGS: Provide or ensure provision of accurately positioned and securely fixed framing to support fixtures, fittings and services. After fixing boards, mark positions of framing for following trades.
- 365 ADDITIONAL SUPPORTS FOR BOARD EDGES AND PERIMETERS: Provide or ensure provision of additional framing, accurately positioned and securely fixed, to give full support to board edges and lining perimeters in accordance with board manufacturer's recommendations.
- 375 NEW WET LAID BASES: Provide or ensure provision of a continuous strip of bituminous felt DPC or other approved material under partitions/freestanding wall linings, cut to the full width of the partition/lining.
- 385 SERVICE PENETRATIONS: The dry lining contractor must liaise with the Main Contractor and other contractors to ensure that fire resistance and other specified performance requirements are not impaired by service penetrations.  
In particular:
- Form framed openings accurately for grouped services, ducts, etc. allowing for associated fire barriers.
  - Provide insulation backings to recessed electrical outlets and switches as recommended by the plasterboard manufacturer.
- 395 CONTROL SAMPLE(S): Complete area(s) of finished work in approved locations as follows and obtain approval of appearance before proceeding:
- 405 PLASTERBOARD GENERALLY: To BS EN 520: types A, H1 (Moisture Resistant), F, P, D, R or I with exposed surface and edge profiles suitable to receive the specified finish.
- 406 GYPSUM BOARD WITH MAT REINFORCEMENT (GLASROC F FIRECASE): To EN 15283: Part 1, Types GM-F & H2 (Moisture Resistant).

## **FIXING/FINISHING**

- 435 DRY LINING GENERALLY:
- Fixing, jointing and finishing materials and accessories, where not specified otherwise, to be as recommended by the board manufacturer.
  - Handle and store materials in accordance with BS 8212:1995, section 5. Do not use damaged boards.
  - Use operatives properly trained for dry lining work and who have attended a recognised training scheme.
  - Fix boards only in areas which have been made weathertight. Prevent frost damage.
  - Cut boards neatly and accurately without damage to core or tearing of paper facing. Keep cut edges to a minimum and position at internal angles wherever possible. Mask with bound edges of adjacent boards at external corners.
  - Fix boards securely and firmly to suitably prepared and accurately levelled backgrounds. Set heads of fastenings in a depression; do not break paper or gypsum core. Finish neatly to give flush, smooth, flat surfaces free from bowing and abrupt changes of level.

455A METAL STUD FRAMING:

- Install using components, accessories and methods recommended by the board manufacturer.
- Set out floor/head channels and perimeter studs to give a framework which is accurately aligned with a true vertical plane. Fix securely at all perimeters at not more than 600mm centres.
- Position studs at equal centres to suit specified linings, maintaining sequence across openings. Provide additional studs as necessary to ensure support to all vertical edges of boards.
- Accurately form openings to receive door sets using Gypframe metal studs and suitable timber framing or Gypframe metal studs sleeved with Gypframe channel as necessary to achieve the strength grade requirements of the framing assembly and adequately support the weight of the door.

465A STAGGERED STUD PARTITIONS: Ensure that additional noggings, bearers, etc. are fixed between alternate studs and do not touch adjacent offset studs. Do not fix boards to adjacent offset studs. Ensure that acoustic isolation between each side of partition is maintained at corners.

467A BRITISH GYPSUM METAL STUD PARTITIONS: Fix Gypframe 94 and 148mm wide floor/head channels, and Gypframe 92 and 146mm perimeter abutment studs using two rows of staggered fixings, each at 600mm centres.

468A BRITISH GYPSUM SHAFTWALL: Notwithstanding clause 455A, fix head channel securely at not more than 300mm centres, incorporating Gyproc FireStrip.

495 MINERAL WOOL INSULATION TO METAL STUD PARTITIONS/LININGS:

- Fit securely with closely butted joints, leaving no gaps. Unless the insulation is of a self supporting slab type fitted between studs, fix at head of frame using short sections Gypframe angles or proprietary clips by others.

516A ACOUSTIC SEALANT:

- Manufacturer and reference: British Gypsum, Gyproc Sealant.
- Location: At junctions with adjoining structure, and at other airpaths.
- Apply as a continuous bead to clean, dry, dust-free surfaces, leaving no gaps.
- After application of sealant, bulk fill gaps between floor and underside of plasterboard using Gyproc joint compound.

526A CAVITY BARRIERS (SINGLE FRAME PARTITION):

- Maintain continuity of fire barrier formed by perimeter channels using short lengths of close fitting plasterboard screwed into the web across joints in channel sections and around service holes, except where:
  - The partitions abut plasterboard linings or masonry.
  - Timber sole or head plates are fitted.
- Form continuous vertical barriers using lengths of close fitting plasterboard screwed into the web of individual studs or channels.

526C CAVITY BARRIERS (GYPWALL STAGGERED): Form continuous vertical barriers using stone wool strip cut neatly to fit across stud cavity.

555A FIRE STOPPING: Seal any gaps at junctions of linings and cavity barriers with perimeter abutments, service penetrations, etc. using tightly packed stone mineral wool or fire resisting / intumescent sealant, to prevent penetration of smoke and flame.

560A JOINTS BETWEEN BOARDS:

- Gyproc plasterboards: Lightly butt boards together.
- Square edged Gyproc plasterboards to be finished with Artex textured compound: 3mm gap.
- Glasroc F fibre reinforced gypsum boards: Lightly butt boards together.

565 VERTICAL JOINTS:

- Centre joints on studs. For partitions, ensure that joints on opposite sides of studs are staggered.
- For two layer boarding, stagger joints between layers.

570A HORIZONTAL JOINTS:

- Horizontal joints will not be permitted in surfaces exposed to view except where the height of partition/lining exceeds the maximum available length of board. Agree positions of joints where not specified.
- For two layer boarding, stagger joints between layers by at least 600mm. If previous layer of plank plasterboard, stagger joints between layers by 300mm.
- Ensure that edges of boards are supported by additional framing. For two layer boarding framing must support the outer layer.

586A FIXING FIRECASE THREE SIDED BEAM CASING ON STEEL ANGLES:

- Fix continuous lengths of Gypframe FE1 steel angle to both sides of the top flange or background using fire resistant fixings at 600mm centres. Alternatively, use shot-fired fixings at the same centres. Ensure face of angle is flush with edge of flange.
- Fix fascia boards to Gypframe FE1 angles using screws at 150mm centres. In single layer linings fit 60mm wide backing strips behind end joints, fixed through fascia boards using screws/staples at 150mm centres.
- Fix fascia boards to soffit boards using screws/staples at 150mm centres.
- Stagger joints in multi-layer linings and butt all boards lightly together. Set screw/staple heads in a depression.

586B FIXING FIRECASE THREE SIDED BEAM CASING ON SOLDIERS:

- Push fit pre-cut Glasroc F FIRECASE soldiers neatly between flanges on opposite sides of the steel member at 1200mm centres generally but with two soldiers located behind fascia end joints, each flush with the board end.
- Fix fascia boards to soldiers and soffit boards using screws/staples at 150mm centres.
- Butt all boards lightly together. Set screw/staple heads in a depression.

586C FIXING FIRECASE THREE SIDED COLUMN CASING ON STEEL ANGLES:

- Fix continuous lengths of Gypframe FE1 steel angle to both sides of the flange abutting the wall structure, or to the wall structure itself, using fire resistant fixings at 600mm centres. Alternatively, use shot-fired fixings at the same centres. Ensure face of angle is flush with edge of flange. Use additional Gypframe FE1 angles where the column flange is set at right-angles to the wall structure.
- Fix return boards to Gypframe FE1 angles using screws at 150mm centres, and face boards to return boards using screws/staples at 150mm centres.
- Stagger joints in multi-layer linings and butt all boards lightly together. Set screw/staple heads in a depression.

586D FIXING FIRECASE THREE SIDED COLUMN CASING ON SOLDIERS:

- Push fit pre-cut Glasroc F FIRECASE soldiers neatly between flanges on opposite sides of the steel member at 1200mm centres generally but with two soldiers located behind fascia end joints, each flush with the board end.

- Fix return boards to soldiers and face boards to returns using screws/staples at 150mm centres.
  - Butt all boards lightly together. Set screw/staple heads in a depression.
- 586E FIXING FIRECASE FOUR SIDED COLUMN CASING:
- Fix boards on adjacent faces to each other using screws/staples at 150mm centres.
  - Stagger joints in multi-layer linings and butt all boards lightly together. Set screw/staple heads in a depression.
- 586G FIXING FIRECASE FOUR SIDED BEAM CASING ON SOLDIERS:
- Push fit pre-cut Glasroc F FIRECASE soldiers neatly between flanges on opposite sides of the steel member at 1200mm centres generally but with two soldiers located behind fascia end joints, each flush with the board end.
  - Fix fascia boards to soldiers and soffit/ top boards using screws/staples at 150mm centres.
  - Butt all boards lightly together. Set screw/staple heads in a depression.
- 591A FIXING PLASTERBOARD TO METAL SUPPORTS:
- Partitions/linings/casings:
    - Face layer (Plasterboard):
      - Fix securely to all supports at maximum 300mm centres (reduced to 200mm at external angles where recommended by the board manufacturer).
    - Face layer (Habito):
      - Fix securely to all supports at maximum 600mm centres (reduced to 400mm at external angles where recommended by the board manufacturer).
  - Previous layer of plank plasterboard: Install with long edges at right angles to studs, and fix securely to each stud using two screws.
  - Other previous layers: Fix securely to supports around the perimeter of each board at maximum 300mm centres.
  - Ceilings: Fix securely to all supports at maximum 230mm centres (reduced to 150mm at board ends and at lining perimeters where recommended by the board manufacturer).
  - Fix working from the centre of each board. Position screws not less than 13mm from cut edges and 10mm from bound edges of boards. Set heads in a depression; do not break paper or gypsum core.
- 591C FIXING PLASTERBOARD TO METAL SUPPORTS (FIREWALL):
- Fix first and second layers securely to all supports at maximum 300mm centres.
  - Where a third layer is specified, fix securely to previous layers at maximum 300mm centres around the perimeter and down the centre of each board.
  - Fix working from the centre of each board. Position screws not less than 10mm from the edge of the board. Set heads in a depression; do not break paper or gypsum core.
- 591D FIXING PLASTERBOARD TO METAL SUPPORTS (GYPWALL CURVE):
- Install plasterboard with long edges at right angles to studs, and fix securely to all supports at maximum 300mm centres (reduced to 150mm at board ends).
  - Fix working from the centre of each board. Position screws not less than 13mm from cut edges and 10mm from bound edges of boards. Set heads in a depression; do not break paper or gypsum core.
- 592A FIXING GYPROC SOUNDBLOC RAPID BOARD TO METAL SUPPORTS: Fix securely to all supports at maximum 400mm centres working from the centre of each board. Position screws not less than 13mm from cut edges and 10mm from bound edges of boards. Set heads in a depression; do not break paper or gypsum core.
- 595 DEFLECTION HEADS: Do not fix boards to head channels when a deflection head is specified.

597A SINGLE LAYER LININGS TO RECEIVE CERAMIC FINISHES (SHAFTWALL): Fix Gypframe 99 FC 50 Fixing Channel between studs at 1200mm vertical centres to support the back face of the plasterboard.

598A TWO LAYER LININGS TO RECEIVE CERAMIC FINISHES (SHAFTWALL): Bond the two layers together with a continuous bead of Gyproc Sealant applied midway between studs.

610 FIXING PLASTERBOARD TO TIMBER

- Fixing to timber: Securely at the following centres (maximum):
  - Nails: 150 mm.
  - Screws to partitions/ wall linings: 300 mm. Reduce to 200 mm at external angles.
  - Screws to ceilings: 230 mm.
- Position of nails/ screws from edges of boards (minimum):
  - Bound edges: 10 mm.
  - Cut/ unbound edges: 13 mm.
- Position of nails/ screws from edges of timber supports (minimum): 6 mm.

620 FIXING PLASTERBOARD WITH ADHESIVE DABS

- Setting out boards: Accurately aligned and plumb.
- Fixing to substrates: Securely using adhesive dabs.
- Adhesive dab spacings for each board:
  - Horizontally: One row along top edge and one continuous dab along bottom edge.
  - Vertically: One row along each edge and thereafter at intermediate spacings to suit size of board:

Thickness (mm)	Width (mm)	Dab centres (mm)
9.5	1200	400
9.5/12.5	900	450
12.5	1200	600

- Adhesive dab dimensions (width x length): At least 50-75 mm x 250 mm.
  - Position of dabs from edges/ ends of boards (minimum): 25 mm.

671A TAPED SEAMLESS FINISH TO PLASTERBOARD:

- Manufacturer: British Gypsum.  
Joint compound: One or more of the following Gyproc products:
  - Gyproc Easi-Fill
  - Gyproc Easi-Fill 45
  - Gyproc Joint Filler
  - Gyproc Joint Cement
  - Gyproc Ready Mix Joint Cement
  - Gyproc ProMix LITE Joint Cement.
- Joints/gaps:
  - Gyproc Joint Tape or
- Internal/ angled corners:
  - Gyproc Joint Tape or
  - Gyproc Easyflex PRO (for Extra Durability)
- External corners:
  - Gyproc Aquabead (for Speed and Extra Durability)
  - Gyproc Easyflex PRO (for Extra Durability)
  - Gyproc Corner Tape
  - Gyproc Drywall Metal Angle Bead
- Shadow gaps:
  - BGM105 Styletrim (25 x 10mm)
  - BGM106 Styletrim (12.5 x 10mm)
- Board ends:
  - Gyproc Drywall Plastic Edge Bead
  - or Gyproc Drywall Metal Edge Bead



Primer/sealer:

- Two coats Gyproc Drywall Sealer where vapour control required (will provide vapour resistance only and does not meet performance requirements for moisture resistant grade boards as defined in BS EN520, type H1)
- Alternatively, one coat Gyproc Drywall Sealer for simple steam stripping of wall coverings (except for vinyl or other low permeability wall coverings) at a later date.
- One coat Gyproc Drywall Primer elsewhere.
- Lightly sand cut edges of boards to remove paper burrs.
- Fill all joints, gaps and internal angles with joint compound and cover with continuous lengths of tape, fully bedded. Reinforce external angles, stop ends, etc. with the specified bead/corner tape.
- When set, cover with joint compound, feathered out to give a flush, smooth, seamless surface.
- Spot nail/screw depressions with joint compound to give a flush surface.
- Fill minor indents. After joint, angle and spotting treatments have dried, lightly sand to remove any minor imperfections.
- Apply specified primer/sealer to give a continuous consistent texture to surface of boards.

681A SKIM COAT PLASTER FINISH: (Hand applied only):

- Manufacturer and reference: **British Gypsum, Thistle Multi-Finish.**  
Thickness: 2mm.
- Pre-Treatment: Thistle Bond-IT (Glasroc H TILEBACKER & Gyproc Moisture resistant grade plasterboards), Thistle GypPrime (required for Rigidur H boards to control suction).
- Reinforcement:  
Joints/gaps/internal corners: Any gaps exceeding 3mm pre-filled and joints reinforced using Gyproc Joint Tape alternatively Thistle ProTape FT50 or FT100 may be used.  
External corners: Thistle Thin Coat Angle Bead or Thin Coat Mini Mesh Bead.  
Edges: Thistle Thin Coat Plaster Stop Bead to all door and window surrounds.
- Fill and tape all joints except where coincident with metal beads.
- Trowel/float to a tight, matt, smooth surface with no hollows, abrupt changes of level or trowel marks.

695 BEADS/STOPS GENERALLY:

- Cut neatly using mitres at return angles. Fix securely using longest possible lengths, plumb, square and true to line and level, ensuring full contact of wings with background.
- After joint compounds/plasters have been applied, remove surplus material while still wet from surfaces of beads which are exposed to view.

**K32 PANEL CUBICLES**

To be read with Preliminaries/ General conditions.

120 PANEL CUBICLES - UNFRAMED

- Manufacturer and reference: Excelsior Panelling Systems Ltd ,Dudley DY2 ORL 01384 267 770
- Product: Mariner Range
- Board/panel/door type: High Density Solid Grade laminate (SGL) with decorative face each side.
- Thickness: 13mm nominal.
- Edge treatment: All edges radiused and polished (black).
- Overall depth: 1960 - 2050mm maximum recommended from face of back wall or rear ducting.
- Colour/Finish - Panels/Doors: From the standard colour range.  
- see plans for details of which cubicles have outward opening doors.
- Floor Clearance: Standard 100mm.
- Range height: 1500mm from FFL to top of headrail.
- Headrail: High strength, extruded aluminium.
- Pilasters: High strength extruded aluminium forming slim section rounded pilasters.
- Wall fixings: Continuous channel
- Colour/Finish - Metals: Light or dark grey aluminium
- Pedestal: Complete with adjusting shims and security fixings.
- Hinges: Aluminium, anti-tamper, safety hinge.
- Indicator bolt and keep: Lever operated bolt with circular face plate and emergency release facility.
- Colour/Finish - Fittings: Light or dark grey aluminium
- Accessories: Ambulant disabled cubicles to have grab rails, Coat Hook (NBS Clause N13/480);

140 DUCT/ WALL LININGS (TO ENCLOSED CISTERNS AND PIPES - PANELS ONLY

- Manufacturer and reference: Excelsior Panelling Systems Ltd ,Dudley DY2 ORL 01384 267 770
- Product: Mariner Range
- Panel: High Density Solid Grade laminate (SGL) with decorative face both sides.
- Panel Thickness: 13mm nominal.
- Edge treatment: Radiused and polished.
- Background/Support framing: 18mm MR MDF sub frame  
25mm WBP plywood sole plate.  
Support frame facings/flashgaps: 13mm High density solid grade (SGL) laminate with decorative face both sides.
- Colour/Finish: From the standard colour range.
- Method of fixing panels: Concealed plastic clips fixed to edge of shadowgap strips and reverse of facing panels.
- Joint treatment: Nominal 25mm wide shadow gap between each panel section (Nominal 70mm wide where shadow gap is to accommodate cubicle partition).
- Components/Accessories: MFC shadow gap system and fixing clips, sanitary appliances as specified in section N13.
- Included features: Lockable removable access panels.

150 PIPE BOXING

Any pipework or drainage in toilets or kitchen areas that is not hidden within IPS or other units to be boxed in Pendock Melamine faced, pre-formed 5mm ply. Profile TK or TKD.

210 SAMPLES

- General: Before placing orders submit representative samples of the following: laminate colours.
- Delivered materials/ products: To match samples.

230 PROTECTION

- Doors and panels: Stack flat on bearers and separate by spacers where necessary to prevent damage to or from projections.
- Completed cubicles: Keep clean and dry, and adequately protect from damage until completion.

250 INSTALLATION

- Programming: Do not install cubicles before building is weathertight, wet trades have finished their work, wall and floor finishes are complete, and the building is well dried out.
- Accuracy: Set out to ensure frames and/ or panels and doors are plumb, level and accurately aligned.
- Modifications: Do not cut, plane or sand prefinished components except where shown on drawings.
- Method of fixing: Secure cubicle components using methods and fasteners recommended by the cubicle manufacturer. Do not distort frames, panels and doors.
- Hinges: Adjust so that doors hang inwards.

## **K40 DEMOUNTABLE SUSPENDED CEILINGS**

To be read with Preliminaries/ General Conditions.

### **TYPE(S) OF SUSPENDED CEILING**

#### **110 SUSPENDED CEILING(S)**

Ceiling system: Tiles

Type: Dune tegular edge

Manufacturer: **Armstrong World Industries, Freephone 0800 371849, fax 01895 274287.**

Suspension system: Grid and hanger fixings and spacings as recommended by the suspended ceiling/membrane manufacturer.

**Grid type:** Exposed 15mm Design Grid System

**Grade:** Standard

**Colour:** White RAL9010 (WR)

Hangers: Trulok BP AW950 Suspension wire secured to soffit with brackets and fixings recommended by suspended ceiling contractor

Perimeter trims: Trulok perimeter angle trim BPT1924, or for a full module ceiling with plasterboard perimeter margin use Armstrong Axiom Transitions System as detailed below. Utilise tegular blocks to compensate for cut edge versus tegular edge.

**Size(s):** 600 X 600 X 19 mm

**Finish/colour:** White

**Acoustic performance:**

**Services fittings:** Install

### **GENERALLY/PREPARATION**

205 SUSPENDED CEILINGS GENERALLY: Unless specified otherwise, comply with the relevant recommendations and performance requirements of BS 8290 for the selection and assembly of components and materials.

210 CONTROL SAMPLE(S): Complete area(s) of the finished work in approved location(s) and obtain approval of appearance before proceeding:

215 SAMPLE(S): Before placing orders submit representative sample(s) of tiles and grid. Ensure that delivered materials match samples.

#### **220 ENVIRONMENTAL CONDITIONS:**

Areas for storage and installation must be clean, dry, well ventilated and free from excessive and/or rapid variations of temperature and humidity.

Do not install membrane material until the building is weathertight and wet trades have finished their work. Before, during and after installing, ensure that temperature and humidity are maintained at levels similar to those which will prevail after building is occupied.

Notwithstanding the above, delivery of materials and installation of the suspended ceiling will be taken as joint acceptance by the Main Contractor and Ceiling Contractor of the suitability of the environmental conditions.

230 CONDITIONING: Before fixing store materials on site for at least 48 hours in conditions similar to those which will prevail after the building is occupied. Ensure free circulation of air to all surfaces.

240 COORDINATION WITH OTHERS: The Ceiling Contractor must liaise with the Main Contractor and other contractors to ensure:

Related work within the void (services, partitions, fire barriers, fire stopping, painting, etc.) is at a suitable stage of completion to enable ceiling installation to proceed without damage or disfigurement to the ceiling system.

Fixtures around which the ceiling is to be installed are completed and that services, fire barriers, etc. are in the correct position relative to the ceiling grid.

Hangers do not press against services, etc. and are installed vertically. Where obstructions prevent vertical installation, brace hangers against lateral movement or provide rigid bridging structures across obstructions.

Services integrated within the ceiling membrane are positioned accurately, supported adequately and aligned and levelled in relation to the membrane and suspension system.

#### 245 STANDARDS

- Steel panels: To BS EN 10346.
- Aluminium sheet, strip and plate: To BS EN 485.
- Aluminium bars, tubes and sections: To relevant parts of BS EN 515, BS EN 573, BS EN 755 and BS EN 12020.

### INSTALLATION

#### 305 WORKMANSHIP GENERALLY:

Handle, store and fix suspended ceiling materials and accessories in accordance with manufacturers' recommendations, BS 8290:Part 3 and design/performance requirements. Set out accurately to give level soffits free from undulations, lipping and distortions in grid members.

Fix securely with additional bracing and stiffening as necessary at upstands, access hatches, partition heads, etc. to give a stable system resistant to wind induced uplift and other specified design loads and pressures.

Do not use cartridge or powder activated methods for top fixings or rivets for bottom fixings of hangers.

#### 315 PROTECTION:

No part of the suspension system must be subjected to loads for which it is not designed, including lateral loads from ladders, tower scaffolds, etc.

Membrane materials must be handled carefully, kept clean and removed and replaced correctly using special tools and clean gloves, etc. as appropriate.

#### 325 SETTING OUT: Unless shown otherwise, set out ceilings so that:

Edges of tiles/panels are never less than half in width or length. Position grid to suit tile/panel size(s), allowing for permitted deviations from nominal size(s).

All lines and joints are straight and parallel to walls unless specified otherwise. Where surrounding walls or other building elements and features to which the suspended ceilings relate are not square, straight or level, obtain instructions on setting out.

#### 335 INSTALLING PERIMETER TRIMS

- Jointing: Neat and accurate, without lipping or twisting.
- External and internal corners: Mitre joints generally. Minimize. Use longest available lengths of trim. Align adjacent lengths.
- Fixing: Fix firmly to perimeter wall, edge battens or other building structure.

#### 355 FIXING BOARDS TO CONCEALED GRIDS:

Fix and join boards using methods, materials and accessories recommended by the board manufacturer.

Cut boards neatly and accurately. Do not use damaged boards.

Screw boards securely and firmly to grid members at recommended centres and edge

distances, to give a flat surface free from bowing and lipping. Set heads of screws below surface of boards and fill flush with surface.

Where not shown otherwise, provide movement joints as appropriate for the area of ceiling and/or to coincide with movement joints in surrounding structure.

Stagger joints of boards applied in two or more layers. Ensure that edges and ends of each board are fully supported and screwed to grid members.

#### 360 WIRE HANGERS:

Straighten before use and install vertically without bends or kinks. Do not allow hangers to press against any fittings within the void.

Tie securely at top and bottom with tight bends to loops to prevent any vertical movement.

#### 370 TIMBER EDGE BATTENS:

Material: Planed softwood to BS EN 942, class J10.

Moisture content: 15% +/- 2 at time of fixing.

Finished size: TBC

Finish (to be applied before ceiling grid is installed): Painted

Fix with mechanical at not more than 450 mm centres.

#### 375 BOARD CEILING SYSTEMS

- Cut boards: Neat and accurate.

- Fixing to grid:

- Board edges: Fully support. Screw to grid members. Set heads of screws below surface of boards and fill flush with surface.

- Boards applied in two or more layers: Stagger joints.

- Movement joints: Provide as appropriate for the area of ceiling system and/ or to coincide with movement joints in surrounding structure.

#### 380 JOINTING OF PERIMETER TRIMS to be carried out neatly and accurately without lipping or twisting using:

Mitred joints at all external and internal corners.

The longest lengths of trim available from manufacturer to keep intermediate butt joints to a minimum.

#### 390 OPENINGS IN MEMBRANE MATERIALS to be formed accurately and neatly to suit sizes and edge details of fittings, using methods recommended by the manufacturer and without causing damage or distortion.

#### 395 SUPPORT OF SMALL FITTINGS VIA MEMBRANE MATERIALS:

Fittings must be adequately supported without causing damage or distortion to the membrane, by the use of rigid backing boards or other suitable means.

Surface spread of flame rating of additional supporting material must match that of the ceiling membrane material.

#### 400 INSULATION:

Fit accurately and firmly with no gaps so that specified performance levels are achieved. Insulation within individual tiles, trays, etc. must be fitted closely and secured to prevent displacement when tiles are installed or subsequently lifted. Reseal any cut dustproof sleeving.

Lay out insulation over the membrane in the widest practical widths to suit spacings of grid members, with closely butted joints.

Do not cover electrical cables (unless they have been sized accordingly). Cut insulation carefully around electrical fittings, etc.

On sloping and vertical areas of ceiling, fastenings must be used to prevent displacement.

401 CEILING MOUNTED LUMINAIRES

- Support:
  - Independently supported luminaires: Suspension adjusted to line and level of ceiling.
  - Ceiling supported luminaires: Modifications and/ or extra support required:
- Surface mounted luminaires: Units installed so that in event of a fire the designed grid expansion provision is not affected.
- Modular fluorescent recessed luminaires: Compatible with ceiling module. Extension boxes must not foul ceiling system.
- Recessed rows of luminaires: Provide flanges for support of grid and infill units, unless mounted above grid flanges. Retain in position with lateral restraint.
- Fire protecting/ resisting ceiling systems: Luminaires must not diminish protection integrity of ceiling system.
- Access: Provide access for maintenance of luminaires.

405 FIRE STOPPING TO FIRE RESISTING SUSPENDED CEILINGS: Seal any gaps at junctions of ceiling with perimeter abutments, service penetrations, etc. using tightly packed mineral wool or approved intumescent sealant to prevent penetration of smoke and flame.

410 CAVITY FIRE BARRIERS:

Fire resistance to BS 476:Part 20:

Integrity/insulation (minutes): As per fire drawing

Material: Contractors choice

Fixing: Manufacturers recommendation

Unless shown otherwise, install barriers to subdivide the ceiling void into areas in accordance with building regs.

Fix securely at perimeters and joints, ensuring permanent stability and continuity with no gaps, to provide a complete barrier to smoke and flame.

Fixing to the ceiling must not impair free expansion of grid system or otherwise affect fire resisting performance.

411 MECHANICAL SERVICES

- Fan coil units:
  - Inlet and outlet grilles: Trim ceiling grid and infill units to suit.
  - Space beneath: Sufficient for ceiling system components.
  - Suspension and connections: Permit accurate setting out and levelling of fan coil units.
- Air grilles and diffusers:
  - Setting out: Accurate and level.
  - Linear air diffusers: Retain in place with lateral restraint. Provide flanges for support of grid and infill units.
  - Grille/ diffuser ceiling joints: Provide smudge rings and edge seals.
- Smoke detectors and PA speakers:
  - Ceiling infill units: Scribe and trim to suit.
  - Independent suspension:
  - Flexible connections: Required.
- Sprinkler heads: Carefully set out and level.

415 INSTALLING INSULATION

- Fitting: Fit accurately and firmly with butted joints and no gaps.
- Insulation within individual infill units: Fit closely. Secure to prevent displacement when infill units are installed or subsequently lifted.
  - Dustproof sleeving: Reseal, if cut.
- Width: Lay insulation in the widest practical widths to suit grid member spacings.
- Services: Do not cover electrical cables that have not been sized accordingly. Cut insulation carefully around electrical fittings, etc. Do not lay insulation over luminaires.
- Sloping and vertical areas of ceiling system: Fasten insulation to prevent displacement.

420 SOUND BARRIERS:

Material: Contractor's choice.

Align accurately with partition heads. Fit tightly and fix securely at perimeters and joints, using methods recommended by the barrier manufacturer, including steel support sections as appropriate. Ensure permanent stability and continuity with no gaps.

Seal any gaps at junctions of sound barriers with partition heads, suspended ceiling, structural soffit, walls, ducts, pipes, etc. using mineral wool or suitable sealants.

421 CEILING SYSTEMS INTENDED FOR FIRE PROTECTION

- Junctions of ceiling systems with perimeter abutments and service penetrations: Seal gaps with tightly packed mineral wool or intumescent sealant to prevent penetration of smoke and flame.
- Ceiling system/ Wall junctions: Maintain protective value of ceiling system.
  - Fixings and grounds: Non-combustible.
  - Metal trim: Provide for thermal expansion.
- Access and access panels: Maintain continuity of fire protection.

425 INSTALLING CAVITY FIRE BARRIERS

- Maximum ceiling void dimension in any direction: As per Regs.
  - General: Fix battens securely to channels or angles at abutments to building structure.
  - At perimeters and joints: Provide permanent stability and continuity with no gaps to form a complete barrier to smoke and flame.
- Joints: Form to preserve integrity in fire.
- Service penetrations: Cut barriers neatly to accommodate services. Fit fire resistant sleeves around flexible materials. Fill gaps around services to fire barrier manufacturer's recommendations to maintain barrier integrity. Adequately support services passing through the barrier.
- Ceiling systems intended for fire protection: Do not impair fire resisting performance of ceiling system.
- Ceiling systems not intended for fire protection: Do not mechanically interlink barriers with ceiling system

430 AIR PLENUM BARRIERS:

Material: rigid or semirigid non porous sheets with smooth nondusting surfaces having the same fire spread rating as that required for membrane materials exposed within the void. Fix securely at perimeters and joints, using methods recommended by the barrier manufacturer to ensure permanent stability. All edges and joints to be effectively sealed to prevent air leakages.

500 ELECTRICAL CONTINUITY AND EARTHBONDING:

All substantial conductive parts of the suspended ceiling system including integrated electrical equipment and fittings, are to be electrically continuous and fully earth bonded in accordance with BS 7671 (The IEE Wiring Regulations).

Ensure that earth bonding is completed as soon as possible after completion of each independent area of suspension system.

After completion of the ceiling installation, associated services and fittings, arrange for tests to demonstrate that the ceiling is electrically continuous and fully earth bonded in accordance with BS 8290:Part 3. Notify the CA to enable the testing to be witnessed.

Submit a test report to the CA.



## COMPLETION

505 INSTRUCTIONS AND TOOLS: Provide the Main Contractor with duplicate sets of user instructions and access tools recommended by the suspended ceiling/access panel manufacturer. One for the use of contractors requiring access to the void and the other for handing over to the CA at Practical Completion.

510 ACCESS TOOLS: Provide the Main Contractor with two sets of access tools. One set to be for the use of contractors requiring access to the void and the other for handing over to the CA at Practical Completion.

520 USER INSTRUCTIONS: Provide the Main Contractor with two copies; one for the use of contractors requiring access to the void and the other for handing over to the CA at Practical Completion. The contents of the instructions to include:  
Correct methods for lifting and replacing tiles, panels, etc.  
Cleaning methods and materials.  
Decoration of tiles and touching up where appropriate.  
Limitations placed on subsequent alterations and maintenance procedures to fire resisting suspended ceilings to ensure that their performance is not impaired.

530 SPARES: Provide the following and hand over to the Employer at Practical Completion:  
2 boxes of each type of tile.

540 POST INSTALLATION VISIT: After completion of services and associated work by others:  
Thoroughly inspect the ceiling installation for defects. Prepare a schedule of outstanding defects and submit a copy to the CA.  
Check that tiles, integrated luminaires, diffusers, etc. are correctly fitted, aligned and clean.

**L10 WINDOWS/ ROOFLIGHTS/ SCREENS/ LOUVRES**

To be read with Preliminaries/ General conditions.

**GENERAL**

**PRELIMINARY INFORMATION/REQUIREMENTS**

110 EVIDENCE OF PERFORMANCE: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.

- The frames are to comply with all relevant British Standard Specifications, Codes of Practice, and Statutory Requirements (including all revisions and amendments), as well as the guides and recommendations laid down by the relevant trade organisation relating to their performance, constituent materials, methods of assembly and use. Any exceptions to the above are to be advised in writing by the specifier.
- All frames and other sections to be extruded to BS EN 755-9: 2001, Specification 6060 or 6063 T6.
- All materials and ancillary products are to be used and fitted entirely in accordance with the instructions of the relevant manufacturer.

120 DESIGN, SITE DIMENSIONS AND SURVEY

Design

- Window configurations are to be as depicted within the attached Window Schedule/Drawings
- Specialist Contractor shall provide drawings to the Main Contractor depicting all profiles, glazing, weather seals, gaskets fixings and sealants to be used and the relationship of the above to the adjacent structural detail for each window type
- Specialist Contractor is to provide drawings showing the relationship of framing to structure, including all profiles, sealants, fixings, trims and weathers seals.
- Notwithstanding any information within this Specification, all framing and infills shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1997, and imposed loads as defined in BS6399 Pt1: 1996, and the Specialist Contractor shall carry out calculations to demonstrate this.
- Any packing sections or materials required to compensate for misaligned apertures shall be agreed by the Contract Administrator prior to manufacture.
- Allow for anomalies and variations in the size of the openings, and for out-of-square openings. This is to include for the manufacture of 'specials' as necessary.

Site Dimensions

- Site dimensions must be taken and recorded on shop drawings before starting to make windows.
- Units to be manufactured to suit existing/prepared openings.

130 DRAINAGE: The frames are to incorporate an adequate means of self-drainage. This is to be achieved using a box section sub-sill or drainage tray, according to site requirements, allowing drainage through frame of window and exiting via hidden drainage holes in the nose of the sub-sill or drainage tray. Window and door combinations to be sealed at either end with foam plugs, preventing water seepage into structure.

All windows shall have drip-trim fitted to the head of the frame.

135 PROTOTYPES: Prepare one window and arrange for inspection by the CA before starting repetitive fabrication:

140 CONTROL SAMPLES: After finalisation of all details, prepare one window, as part of the quantity required for the project, and obtain approval of appearance before proceeding with manufacture of the remaining quantity:

**COMPONENTS**

300 LOUVRES

Bottom glazed panel of each leaf of the external double kitchen door to be removed and replaced with a matching PPC aluminium louvred cassette incl insect screening to the inside face. Contractor design

330 ALUMINIUM WINDOWS TO NEW MODULAR BUILD BLOCK:

332 MANUFACTURER AND REFERENCE:

Contractors choice.

333 PERFORMANCE:

- All framing including mullions, transoms and couplers shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1995, and the Specialist Contractor shall provide calculations to demonstrate this if requested by the Contract Administrator.
- Aluminium window system to have been tested in accordance with BS.5368, to meet Exposure Category shown below as defined by BS 6375:1 1989, and to have achieved the following:
  - Air Permeability 600 Pa, Water Penetration 600 Pa, Wind Resistance\* 2400 Pa\* Category 2400 Special

\* figures may vary from the design maximum wind loading which should be calculated in accordance with BS6399: Part2: 1995.

334 GLAZING:

All glazing to windows to be secured by means of internal glazing beads.

Glazing to be hermetically sealed double-glazed 28mm/comprising inner pane of 6.4mm laminated safety glass and an outer pane of 6mm toughened "soft coat" low emissivity glass, with an argon filled cavity and thermally broken "warm edge" spacer bar.

The sealed units are to have a centre pane U value no greater than 1.1Wm<sup>2</sup>/K

South facing windows to have a solar tint.

All glazing in WCs and bathrooms shall have obscured glass to the inner pane.

All glass within 800mm from FFL shall be toughened or laminated, (within 1500mm from FFL if within a door or 300mm of a door).

All glass and glazing shall conform to:

- EN 12600: Specification for Impact Performance;
- BS.6262: Parts 1-6:2005 Code of Practice for Glazing Buildings;
- BS.952: 1978: Glass for Glazing;
- BS EN 1279: Glass in buildings. Insulating Glass Units.
  - Part 1: 2004 Generalities, dimensional tolerances and rules for the system description.
  - Part 2: 2005 Long term test method and requirements for moisture penetration
  - Part 3: 2005 Long term test method and requirements for gas leakage rate and for gas concentration tolerances.
  - Part 4: 2002 Methods of test for the physical attributes of edge seals
  - Part 5: 2005 Evaluation of conformity.
  - Part 6: 2002 Factory production control and periodic tests.

Recommendations of the Glass and Glazing Federation should be adhered to.

### 335 IRONMONGERY /ACCESSORIES

- Top hung and side hung Casement Windows
  - Mechanism:  
Maco Mk2 Eurogroove shootbolt espagnolette locking system comprising two rods, moving in opposite directions from side of the sash frame into keeps securely fixed to perimeter frame, and with additional centre cam unit. All keeps to be profile related.  
Stainless steel friction stays to all opening lights, and suited key-lockable handles throughout.

The Specialist Contractor is to obtain the written confirmation of the Contract Administrator as to the type and position of all ironmongery before commencing manufacture.

### 336 TRICKLE VENTILATION

- Type and Position
- Each window unit is to be fitted with aluminium trickle ventilators, to meet Building Regulations (Part F1, 2006). Ventilator to be secure and adjustable, complete with insect screen. Ventilator to be fitted above the head of the outer frame.
- Where the window is of insufficient width to accommodate the level of ventilation required by Approved Document F1 the Specialist Contractor shall bring this to the attention of the Contract Administrator.

Trickle ventilation shall also comply with Approved Document J and BS5540 Part 2 with respect to ventilation of gas burning appliances. This requirement shall take precedence over the requirements of Approved Document F1.

### 337 FINISH: Matt finish polyester powder coating to BS EN 12206-1:2004. Colour to be a RAL 7012 matt finish

511 GLAZED TIMBER SCREENS GENERALLY:

- Manufacturer: Noberne Doors Ltd. or similar approved
- Product reference: Fire Screen 30 and 60 Minutes – see drawings for locations.
- Frame and architraves: Beech. Sample to be approved by CA prior to manufacture.
- Class: To BS EN 942- J40.
- Finish as delivered: Pre-lacquered.
- Glazing details: As L40/230 and L40/231.
- Moisture content on delivery: 7 to 12%.
- Perimeter seals: Intumescent seals to manufacturer's recommendations.
- Accuracy: Permissible deviations:  
Height and width:  $\pm 2$ mm.  
Straightness of members measured in the plane of the screen or at right angles:  
Up to 1200mm long: 3mm.  
Up to 2400mm long: 5mm.  
Difference in length of diagonals when frame length plus height is:  
Up to 1800mm: 3mm.  
Over 1800mm up to 3000mm: 5mm.  
Over 3000mm: 10mm.
- Special features: As detailed drawing.
- Fixing: Screw and pellet as clause 780.
- Other requirements: Frosted film as per Door Schedule.

600 UPVC REPLACEMENT WINDOWS TO EXISTING SCHOOL BUILDING

The school PFI provider Engie will be undertaking some 'life-cycle' window and door replacement (and associated enabling asbestos strip) in the school concurrently with this contract.

The mandate is to replace like for like in UPVC ie exactly replicating the current provision of opening casements etc

**See attached Engie spec for window and external door replacement following on after this section.**

The replacement windows in the kitchen were to be part of the Engie works but agreement has been made for the replacement of those windows to be done as part of this contract. The spec of the replacement windows in the kitchen area is to fully comply with the aforementioned Engie spec with the following exceptions:

1. The glass in windows W71, W72, W73, W74, W75 ANS W81 is to comprise an outer leaf of 6mm grey optifloat glass and 1 layer 6mm "K" glass inner leaf with a 16mm Argon gas filled cavity.
2. Any new opening casement windows in the commercial kitchen space are to have the ironmongery removed so that they cannot be opened
3. Window W73 and window W77 will be split because of the new internal wall punctuating the clerestory glazing
4. There are to be 5No. insulated fixed panels through which circular fans are to be mounted.

## **INSTALLATION**

### **710 PROTECTION OF COMPONENTS**

General: Do not deliver to site components that cannot be installed immediately or placed in clean, dry floored and covered storage.

Stored components: Stack vertical or near vertical on level bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.

### **740 CORROSION PROTECTION**

Before fixing, apply two coats of bitumen solution to BS 6949 or an approved mastic impregnated tape, to surfaces of aluminium components which will come into contact with concrete, mortar or plaster, ungalvanised steel or iron.

### **750 BUILDING IN**

Will not be permitted except where specifically stated on the drawings.

### **765 WINDOW INSTALLATION GENERALLY**

Install windows into prepared openings, maintaining a maximum gap of 10mm between the frame edge and the surrounding construction.

Distortion: Install windows without twist or diagonal racking.

### **782 FIXING OF ALUMINIUM FRAMES**

Fasteners: Sherardized/galvanised steel woodscrews as per manufacturer's instructions, via galvanised mild steel straps/plates. Windows contractor shall allow for any additional secondary framing which may be required where frames are remote from primary structure/sound backgrounds. Refer to detail drawings.

Spacing: When not predrilled or specified otherwise position fasteners not more than 150 mm from ends of each jamb, adjacent to each hanging point of opening lights, and at maximum 600 mm centres.

### **810 SEALANT JOINTS:**

Sealant manufacturer and reference: Adshead Ratcliffe "Arbosil 1096" or equal and approved.

Colour: To be confirmed

Prepare joints and apply sealant as section 222. Finish triangular fillets with a flat or slightly convex profile.

### **820 IRONMONGERY**

Fixing: Assemble and fix carefully and accurately using fasteners with matching finish supplied by ironmongery manufacturer. Do not damage ironmongery and adjacent surfaces

Checking/ adjusting/ lubricating: Carry out at Practical Completion and ensure correct functioning.

**PROJECT SPECIFICATION**

**FOR**

**WINDOW & EXTERNAL DOOR REPLACEMENTS**

**AT**

**Various Sites**

ENGIE  
Vinewood House  
Unit 1  
Waters Edge Business Park  
Stoke-on-Trent  
ST4 4DB

November 2018

**Issue 001**

## CONTENTS

Section 1 – Project Specific Preliminaries

Section 2 – Project Specific Materials and Workmanship Specification

Section 3 – Scope of Works



**SECTION 1 PROJECT SPECIFIC PRELIMINARIES**

**GENERALLY**

Procurement:

The Contractor is referred to the Engie Coupa Event Information document for details of procurement related matters.

The project is tendered on a design and build contract basis. Engie take no design responsibility for these works.

**A10 PROJECT PARTICULARS**

A10/10 THE PROJECT:

Project Number: 19-08 A,B,C,D,E,  
 Location: Various sites  
 Description: Replacement of windows & external doors

BUILDING

The existing buildings are Primary Schools and Secondary Schools situated in residential areas.

Address : Refer to Appendix C Schools Directory

The Buildings are occupied and in full operation as schools with no Public Visitors

PARTIES ADMINISTERING THE PROJECT (ENGIE)

	Name	Tel.
Stoke Shools Project Co-ordinator	Amanda Sales amanda.sales@engie.com	Mobile: 07816228729
Stoke Schools Technical Manager	David Ashworth david.ashworth@engie.com	Mobile: 07855961610
Procurement Manager	Alan Shufflebotham alan.shufflebotham@engie.com	Mobile: 07970173694

A10/113 OTHER PARTIES INVOLVED IN THE PROJECT

Site Contacts	Refer to Appendix C Schools Directory	
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A10/120 **CONTRACTORS PERMITTED WORKING HOURS AND SECURITY ARRANGEMENTS DURING THE PROJECT:** The whole of the Project shall ideally be carried out outside of normal school hours. Deliveries shall be undertaken on agreed hours. Final arrangements will be formalised at the Pre-Start Meeting, and all changes must be by prior arrangement and approval of the Project Co-ordinator and site representatives (with a minimum of 3 working days notice).



## **A12 THE SITE/EXISTING BUILDINGS/FACILITIES**

A12/185 A HEALTH AND SAFETY FILE for the building and/or projects previously carried out at the building is available. To arrange an inspection contact the Engie Project Co-ordinator or Technical Manager.

### Known Hazards

There is known to be asbestos on the sites within the pack, in various locations throughout the buildings. Any asbestos likely to be disturbed as part of this project will be removed by licensed asbestos removal contractors co-ordinated by Engie. Some of these works are at high level.

A12/200 ACCESS TO THE BUILDING: Parts of the building may be in occupation whilst the Project is carried out. The Contractor shall adhere fully with the specific requirements of the Project Co-ordinator with regard to working in occupied premises. The Contractor is to ascertain any limitations imposed by the Police Authority, Local Authority and FM. All deliveries of materials must be accompanied by contractors representative(s) to ensure that un-loading and storage is arranged with the minimum of disruption

- Vehicular access for deliveries shall be via: As agreed at pre-start meetings
- Works access to the building shall be via: As agreed at pre-start meetings
- Car parking for contractors vehicles shall be: As agreed at pre-start meetings

A12/220 SERVICES ISOLATION POINTS: The Contractor shall ensure that isolation points for all services which will be worked on or affected by the works have been identified. Should the Contractor have any doubts with regard to the location of services isolation points he shall discuss with the Engie Project Co-ordinator or Technical Manager, prior to commencement of works on site.

A12/250 TOILETS: The Contractor and sub-contractors will be permitted to use the staff toilet facilities TBC. All toilet shall be kept clean during the works [e.g. The use of toilets for cleaning tools/brushes/tools etc. will not be permitted] and cleaned upon completion of the project. Also refer to A34/470.

A12/290 SITE VISIT: The contractor must visit site to ascertain the nature and extent of the works, the building, access thereto and all local conditions and restrictions likely to affect the execution of the works may be made by prior arrangement with the site using the details in A10/113. The tenderer must not under any circumstances, attend or attempt to attend any site without a prior arrangement. A minimum of 48 hours' notice should always be allowed.

The tenderer's attention is drawn to section A34/270 with regard to accessing the areas required for this purpose where areas may not be confirmed free of asbestos.

Manufacturers of window units will have full responsibility for taking on site measurements of window openings to establish correct manufacture/fabrication sizes. Sizes indicated on drawings and/or in project contract documentation are NOT to be used for manufacturing/fabrication process.

## **A31 PROVISION, CONTENT AND USE OF DOCUMENTS**

A31/100 PRE-START CONDITION SURVEY: The Contractor shall prepare a detailed schedule and/or photographic condition survey clearly identifying existing conditions in all areas of the site where the contractor, subcontractors and their site related traffic will be present for agreement by the Project Co-ordinator. This includes internal transit routes used for materials movement and welfare by contractors operatives. It is important that the contractor records accurately any

existing damage prior to commencing works on site as any damage found on completion will be attributable to the contractor.

A31/500 ATTENDING SITE

**Attending Site Prior To Works**

The Contractor is advised to attend site prior to issuing their Quotation Return.

For access to site please contact the Site – 48 hours' notice please. – Refer to A10/113

**Attending Site As Part Of The Works.**

In addition to the Works the Contractor's Representative shall attend Site for the following:

- a) Pre Start Meeting (1/2 day)
- b) Handover Meeting (1/2 day)
- c) Progress Meetings (1/2 day per fortnight approx.)

A31/250 RISK ASSESSMENTS AND METHOD STATEMENTS must be submitted to the Project Manager not less than seven days before the proposed date for start of construction work. Risk assessments and method statements must be site and task specific. Separate risk assessments and method statements must be provided by any sub-contractor appointed to the works.

A31/350 THE CONSTRUCTION PHASE HEALTH AND SAFETY PLAN developed from the Pre-tender Health and Safety Plan must be submitted to the Project Co-ordinator not less than seven days before the proposed date for start of construction work. Do not start construction work until the Planning Supervisor has confirmed in writing that in his view the Construction Phase Health and Safety Plan includes the procedures and arrangements required by CDM Regulation 15(4). The Construction Phase Health and Safety Plan shall include method statements related to hazards identified in the Pre-tender Health and Safety Plan and other significant hazards identified by the contractor.

A31/400 CONTRACTORS PROGRAMME: The contractor will be required to provide a programme of works including start and completion dates to suit the site and operational implications.

The programme must show the following:

Elemental breakdown of the Works and proposed duration, Lead-in/manufacture times, any sectional or phased completions

Submission of Programme: The programme is to be submitted to the Project Co-ordinator in either electronic format, prepared using Microsoft Project, or appropriately sized paper copies.

**A32 EMPLOYER'S REQUIREMENTS MANAGEMENT OF THE WORKS**

A32/102 PERSON IN CHARGE (WORKING FOREMAN): At all times during the carrying out of the works, the contractor is to keep on the works a competent person in charge. The Person in Charge shall combine his site work duties with the co-ordination, supervision and administration of the Works, (including all sub-contractors and suppliers).

A32/110 TRADE SUPERVISION: In addition to the constant management and supervision of the works provided by the contractor's person in charge, all significant items of work must be under the close control of competent trade supervisors to ensure maintenance of satisfactory quality and progress.

A32/115 CO-ORDINATION OF ENGINEERING SERVICES: Where applicable, the site organisation staff must include one or more persons with appropriate knowledge and experience of mechanical and electrical engineering services, one with another and each in relation to the works generally.

- A32/120 CONTRACT ADMINISTRATORS INSTRUCTIONS: The contractor shall only accept instructions from the Project Co-ordinator. The contractor shall ensure that all instructions are issued in writing.
- A32/125 OUT OF HOURS CONTACT: Provide the Project Co-ordinator at the pre-start meeting with the names and telephone numbers of authorised representatives of the Contractor and sub-contractors who can be contacted in the case of out of hours emergencies.
- A32/130 MONITORING: Engie representatives will carry out site inspections during the works.

**A34 EMPLOYER'S REQUIREMENTS: SECURITY/SAFETY/PROTECTION  
PROTECT AGAINST THE FOLLOWING:**

- A34/261 FIRE: The Contractor must familiarise himself with the local procedures to be followed in the event of a fire alarm being raised before commencing on site. These procedures are available from the site.
- A34/263 SMOKING: Smoking will not be permitted anywhere within the site boundaries.
- A34/265 ALCOHOL: Alcohol will not be permitted on the site under any circumstances whatsoever.
- A34/270 ASBESTOS BASED MATERIALS: The management of asbestos is a most sensitive issue to both Engie and the occupants of our buildings.

Access to areas where asbestos may be present

Engie Stoke Schools operate a policy controlling access to boiler rooms for its own employees with regard to managing the risk of exposure to asbestos. For the purposes of tendering and executing works, contractors are expected to make all appropriate risk assessments in relation to accessing and working within the plant/boiler rooms, using the most up to date information available to them at the time. Engie's Permission to Access Asbestos Areas Policy is available on request and may be adopted by contractors at their discretion.

Discovery or accidental disturbance of asbestos

The Engie policy on how to Manage the Discovery of Asbestos MUST be followed. The following summarises the procedure to be followed if a material suspected of containing asbestos is discovered during works, the aim is to make the area safe as quickly as possible and to avoid disruption and exposure to the buildings occupants:

1. Stop work in that location and vacate the area. Lock the area off if possible or restrict access with appropriate barriering and signage. Report the matter immediately to the Project Co-ordinator or Technical Manager. If the Project Co-ordinator or Technical Manager is not immediately available to give guidance (particularly during out of hours) then contact the ENGIE CSC (Customer Service Centre), who can be contacted via the 24 hours a day 7 days a week on Freephone 0870 606 0065. Follow the advice of the Project Manager/FM who will liaise with the customer/occupants.
2. Engie will arrange for a suitably qualified analyst to attend site and confirm whether asbestos is present or not and to then complete reassurance air tests in the area affected. Guidance will also be obtained as to whether any other works may continue away from the affected area or whether works will be suspended altogether. A copy of air testing and

clearance documentation should be left on site, so that the occupants can be assured that the area is safe to re-occupy.

3. If asbestos is physically damaged or disturbed it will be necessary to undertake some limited removal, sealing or encapsulation in order to obtain satisfactory clearance air tests - if this is the case works will be suspended until the remediation works are complete and certificate of re-occupation issued to Engie.
4. All contractors must have on site at all times personnel who have as a minimum been on an asbestos awareness course, UKATA or equivalent, within the past 12 months.

If there is any doubt over the interpretation or implementation of this clause then the contractor must bring this to the Project Co-ordinator's attention prior to commencing any work on site.

- A34/280 **SAFEGUARDING:** Contractors are required to provide a Disclosure and Barring Service (DBS) Certificate Number and Issue Date, which must be within 3 years, for every operative required to attend site at any time on the project. This applies regardless of out of hours working and applies to all sub-contractors. Disclosure Scotland (any age) or DBS over 3 years old are not accepted.
- A34/285 **WORKING AT HEIGHT:** Contractors must comply with the Work at Height Regulations 2005. Engie do not permit work from ladders including step ladders unless no alternative exists and then only for short duration works. Where no alternative exists a site and task specific risk assessment must be provided to Engie ahead of the task. All access equipment and any special measures required to access any areas must be included in the tender.
- A34/290 **SCAFFOLDING:** Any scaffolding work must comply with TG20:13 and be carried out in accordance with SG4:15. Separate scaffolding risk assessments and method statements detailing compliance with the above and including scaffolding design or relevant NASC TG20 Compliance Sheet must be provided to Engie ahead of the works. A copy of the handover certificate for scaffolding is to be provided to Engie ahead of its use. Contractors must include for weekly inspections of any scaffolding. Weekly inspection records must be available for inspection by Engie throughout the works and Scafftags must be in place.

#### **PROTECT THE FOLLOWING:**

- A34/470 **EXISTING FURNITURE, FITTINGS AND EQUIPMENT TO REMAIN:** Prevent damage to any furniture, fittings or equipment left in the existing property. Move as necessary to enable the Works to be executed, cover and protect as necessary and replace in original positions. All internal flooring must be protected with suitable "roll n stroll" or board and sheeting as appropriate to prevent damage. Testing for suitability of any adhesive product to the relevant floor finishes is the responsibility of the contractor. Any damage to flooring is to be made good at the expense of the contractor, or the flooring replaced.
- A34/481 **ADJOINING PROPERTY:** Prevent trespass of workpeople. Take all reasonable precautions to prevent damage to adjoining property. Obtain permission as necessary from the owners if requiring to erect scaffolding on or otherwise use adjoining property, and pay all charges. Remove and make good on completion or when directed. Bear the cost of repairing any damage arising from execution of the Works.

### **A36 FACILITIES/TEMPORARY WORK/SERVICES**

- A36/100 Toilets and welfare facilities will be made available by the site.

## **A37 OPERATION/MAINTENANCE OF THE FINISHED BUILDING**

A37/100 SUSPENSION OF MAINTENANCE: The ENGIE Technical Maintenance Team has been instructed to suspend maintenance on the relevant assets/areas of the property for the duration of this project.

A37/150 ASSET SHEETS: As part of ENGIE's planned maintenance responsibility for the property, all changes to the property asset register must be recorded and fed back into the planned maintenance database. At Handover, the Contractor must provide the Engie Project Co-ordinator or Technical Manager with details of new assets, assets removed and assets altered.

A37/200 OPERATING AND MAINTENANCE MANUAL  
On completion, applicable documents will be required to be provided to the Engie Project Co-ordinator or Technical Manager for review.

The Contractor shall also provide all necessary testing certificates, As-Installed Drawings and Operating Manuals as required for inclusion in the project "Health and Safety File."

Any risks that remain after completion of the project (i.e. task associated with maintenance of the installation) should be provided with a written method statement for inclusion into this File

Operating Manuals shall comprise instructions on operation and full descriptions of operating features.

### Presentation Of The Operating and Maintenance Manuals:

- Agree format and contents with the Engie Project Co-ordinator or Technical Manager.
- Provide the operating and maintenance manuals in the following form: electronic

### The O&M manual should contain but not limited to the following:

- Full manufacturer instructions on the operation and maintenance of all equipment supplied. Information on any special tools which may be required for maintenance purposes.
- A schedule of ordering codes for all equipment, including manufacturers reference numbers
- A full set of record drawings, including schematics and diagrams for the complete installation. Full set of structural designs & calculations

The following drawings should be provided:

- Installation/ working drawings
- Builders work drawings
- Design drawings

All drawing symbols should be to the relevant standards. The drawings should be marked with the school name and PFI number.

All drawings shall be produced using AutoCad, with files in DXF and DWG format.

A37/250 PRACTICAL COMPLETION/HANDOVER MEETING: With at least 14 days prior notification, the Contractor shall agree a date with the Project Co-ordinator or Technical Manager to hold the Handover Meeting/Inspection. The Engie representative may be accompanied by customer representatives. If necessary, a "snagging list" will be drawn up and agreed with all parties and a

date agreed for a subsequent re-inspection.

COMPLETION AND DOCUMENTATION

When Engie are satisfied that all works have been satisfactorily completed, and all documents and information required for the Operating and Maintenance Manual, including warranties, have been received, a Completion Certificate will be issued for signature from the contractor. The Defects Liability Period will be managed by Engie's Technical Management Team.

A37/260

DEFECT PERIOD

After the Works are complete (including the issue certification and O&M Manuals) the Defect Period shall be 12 months.



## **SECTION 2**

### **2.1 PROJECT SPECIFICS**

#### **2.1.1 HOURS OF WORK**

All works are to be completed in hours unless agreed with the Project Co-ordinator prior to works starting on site. The works should be planned for school holiday periods Monday to Friday. Works outside these times must be subject to specific arrangements.

#### **Stoke-on-Trent City Council 2018/19 Term Dates:**

##### Autumn Term 2018

Schools open: Monday 3 September

Half Term: Monday 29 to Friday 2 November

Schools Close: Friday 21 December

##### Spring Term 2019

Schools open: Monday 7 January

Half Term: Monday 18 to Friday 22 February

Schools close: Friday 12 April

##### Summer Term 2019

Schools open: Monday 29 April

Half Term: Monday 27 May to Friday 31 May

Schools Close: Monday 22 July

##### Autumn Term 2019

Schools open: Monday 2 September

Half Term: Monday 28 October to Friday 1 November

Schools close: Friday 20 December

#### **2.1.2 CONTRACTOR'S SITE SURVEY AND MEASURE**

The tender shall include for all works and equipment necessary to complete the identified works safely, to the standards agreed with Engie and within the constraints of the site identified and agreed during the pre-start meeting. Where not itemised within the schedule of works the pre-measure shall be judged to make allowance for all items which are clearly necessary to achieve the above.

The contractor shall carry out a full survey as part of their works to confirm all information provided herein, and to ensure that their price is fully inclusive.

Manufacturers of window units will have full responsibility for taking on site measurements of window openings to establish correct manufacture/fabrication sizes. Sizes indicated on drawings and/or in project contract documentation are NOT to be used for manufacturing/fabrication process.

#### **2.1.3 WASTE MATERIALS**

Waste materials and packaging shall be removed from site at the end of each working day or stored in a lockable skip. Any waste which has a scrap value of £50 or more shall be moved to Engie's office waste area for disposal by Engie. Any waste which is classified as hazardous waste shall be disposed of correctly in accordance with regulations and a waste disposal note shall be issued to Engie within 1 working day.

## 2.2 PROJECT SPECIFIC WORKMANSHIP AND MATERIALS SPECIFICATION

### 2.2.1 WORKMANSHIP

The installation shall be carried out to the highest standards of workmanship using the best quality materials to the satisfaction of the Client or his representative.

All works must be carried out by suitably qualified, competent installers. All operatives must hold UKATA or equivalent Asbestos Awareness Training, completed within 12 months of the works.

### 2.2.2 MATERIALS

#### Quality

Manufacture will only be accepted from companies currently registered under the British Standards Institutes Quality Assurance Scheme (ISO 9001, EN 29002) and shall be licensed to kite mark window units to BS 7950.

New systems/ products will be covered by a current certificate of assessment and approval issued by the British Board of Agreement. Written details and copies of current certificates will be forwarded to Engie prior to the commencement of manufacture.

### 2.2.3 Guarantee

All window units will carry a comprehensive guarantee covering manufacturing, material defects and all the furniture/ ironmongery for a period of not less than 10 years. Guarantee certificates will be made out in the name of Engie on completion of each contract, with all appropriate O&M information.

### 2.2.4 Standards

Window units shall comply in all respects with the NBS specification reference L10, as per schedule Part 2 – quality benchmarking requirements, Part B – NBS specification of the FM contract agreement for Stoke Schools PFI.

Window units shall comply with the specification for white or near white high impact acrylic modified upvc windows issued jointly by the British plastics federation and the glass glazing federation.

All profiles to be made from self-extinguishing unplasticised polyvinyl chloride (PVC-U) and comply in all respects with BS 7412. All glazing is to be internally beaded.

Main profiles and beads shall not contain reworked material (Regrind).

Anicillary profiles may contain upto 10% regrind, the resulting profile to conform to BS 7412. Regrind to be suppliers own clean rework, generated in house.

### 2.2.5 Colour

White (unless otherwise specified by Engie) homogenous throughout the thickness of UPVC sections.

Finish: Gloss

### 2.2.6 Dimensions

Wall thickness: Minimum 3mm

Frame Cross Section Thickness: Minimum 58mm for frames not exceeding 2m<sup>2</sup>

Minimum 68mm for frames exceeding 2m<sup>2</sup>

Section Profile Width: Minimum 58mm (unless otherwise specified as before) for frames not exceeding 2m<sup>2</sup> Minimum 68mm (unless otherwise specified as before) for frames exceeding 2m<sup>2</sup>

Cill Cross Section Widths: Cills to be available in widths of 120mm, 150mm, 180mm

#### 2.2.7 Cill Profile and Jointing

Frames, sashes, opening light Cills to be extruded to a drip profile and supplied with matching end caps.

Joints and cills: mitred and fusion welded (corners grooved) mullions and transoms welded joints and must meet the tensile strength test of BS 2782.

#### 2.2.8 Reinforcement

Frames, mullions, transoms, sashes and opening lights: mild steel with minimum wall thickness 1.4mm, hot dip zinc coated grade Z1 materials, G 275 N coating to BS.EN 10143:1993. All frames to be reinforced throughout entire lengths (less 100mm at ends to allow for fusion welding), sashes and opening lights to be reinforced throughout the entire length (less 100mm at ends to allow fusion welding).

Reinforcement calculations to satisfy the specific design, exposure and usage requirements will be provided allowing for all expansion couplers all in accordance with the manufacturers recommendations.

All reinforcements shall be to within 5mm of welded junctions and be held in position by suitable screws or rivets. A minimum of two screws must be used and screw centres are not to exceed 100mm.

#### 2.2.9 Doors

Doors shall be made of aluminium and to match the existing pattern (unless otherwise specified).

Fixing of windows units to be direct through frame profile using fischer bolts in accordance with the code of practice for the installation of plastic windows, published by the British plastics window group.

##### 2.2.9.1 Doors to Plant/Boiler Rooms

Doors to plant / boiler rooms must be designed to incorporate adequate ventilation to meet the requirements of the existing plant and equipment manufacturer, British Standards and current Gas Safety Regulations. Contact Engie Technical Manager for any further information or guidance. Only gas flow grade ventilation panels may be installed in these doors.

#### 2.2.10 Condensation Channels

To be provided where specified in the description of works for individual projects.

#### 2.2.11 Fittings

All window fittings to be in CR4 cold reduced mild steel to BS 1449 Part 1: with zinc plate and clear passivate to BS 1706:1990 Class B.

All hardware/ironmongery shall be guaranteed for a minimum period of 10 years and shall comply with BS 7950 accreditation and the BS EN ISO 9001 accredited quality system.

All hinges are to be of a heavy duty friction hinge type unless otherwise specified with size and

weight limitations being strictly observed so as to ensure the correct size of hinge is used for each opening light.

All top hung opening lights shall be fitted with folding openers to give a maximum opening of 150mm (Caldwell folding openers or similar approved). Where top hung opening lights are over 500mm wide, 2 no. folding openers shall be fitted with an interconnecting tandem bar. All top hung opening lights 2m high or above (from floor level to bottom rail of opening light) shall be pole operated with 1 no. pole being provided per room, unless otherwise stated.

Where top hung opening lights are fitted within a residential situation the folding openers shall be replaced with a standard white heavy duty lockable casement catches.

All side hung opening lights shall be fitted with a shoot bolt locking mechanism with cranked operating handles incorporating a locking push button release barrel lock.

All hinges, casement fastener handles and pivot mechanisms, are fixed through into the reinforcement, and/or two walls of PVC-U, using austenitic stainless steel fasteners BS 3111:Part 2: 1979

Other Ironmongery includes the following:

Standard Lock Closer

Panic Device where specified Digital Lock where specified Electronic Strike where specified

Axim LK18-30 Hook Lock

Axim 880 Series concealed transom closer Axim 7085 Panic Exit Device

Codelocks Digital Lock Adams rite

#### 2.2.12 Safety

Each window other than top hung opening lights which are fitted with folding openers shall be fitted with a restricting device to prevent the windows opening in excess of 100mm and restrained in that position to prevent accidental slamming of the units.

#### 2.2.13 Weatherseals

All window units to be double sealed using continuous ethylene-propylene diene monomer (EPDM) neoprene gaskets to BS 4255: Part 1: 1986

#### 2.2.14 Window Boards

Material to match window units colour (unless outside specified as before) to match window units. Thickness: 22mm WIDTH: to match window opening. FIXING: Adhesive fixing of board and end caps supplied with board.

#### 2.2.15 Ventilation

Trickle ventilation to be provided, sized to comply with current building regulations and to give a minimum of 8000mm<sup>2</sup> free ventilation per room for all rooms above 10m<sup>2</sup> floor area. For requirements relating to ventilation to boiler and plant rooms, refer to section 14.1.

#### 2.2.16 Cladding Panels

Infill panels are to be coloured glassal or other approved, incorporating insulation and balance bonded to rear to give requisite 'U' value of 0.45W/m<sup>2</sup>

#### 2.2.17 Glass and Glazing Standards

All glass and glazing to be in accordance with BS 6262:1982 complying with BS CP153. Where double glazing is specified, the manufacture of the units shall be to the standards set out in BS 5713:1979 EPDM neoprene gaskets to the external face of the double glazing and co-extruded

nitrile bead to the internal face. Styrene setting and location blocks will be used to prevent unnecessary glazing movement and to remove excessive vertical loads and stresses from the frame members.

#### 2.2.18 Glass

All glass (unless otherwise specified) shall be double glazed units of 6.4mm nominal thickness laminated glass out pane, 16mm cavity and a 6.4mm laminated glass (low E treated) inner pane conforming to BS 5713. All glass to be clear unless specified otherwise.

All glass shall comply with the requirements of regulation 14 of the workplace (Health, Safety and Welfare) regulations 1992 and BS6206; all glass shall be marked to this effect.

Glazed units are to comply with the requirement of the building regulations Part L for Energy Efficiency and shall be Low E treated giving a maximum calculated U value for the whole window of 1.08 W/m<sup>2</sup>K.

#### 2.2.19 Surveying and Installing

Checks for defects and deficiencies should be carried out around structural openings, both internally and externally. Any apparent defects should be highlighted.

The presence of television, telephone, CCTV & data, security systems or other electrical services should be noted and provisions made for them. Tenderers should include for attendance by Security Services where required to remove/reinstall contacts and/or sensors and liaise directly with them during installation to ensure all security is maintained throughout projects.

Where PVC-U windows are fitted behind reveals, adequate cover must be allowed for subsequent sealing.

A gap 10-12mm must be allowed between the frame with 8mm or 10mm via integral sleeved anchor bolts or by stainless steel brackets, clipped or screwed to the outer frame. All fixing shall penetrate sound structure by a minimum of 50mm. Fixing must not penetrate the DPC's

Perimeter fixing should be to all four sides of the frame, spaced not less than 150mm from corner and mullion and transom joints and be evenly distributed but not more than 600mm apart.

Fixings must hold frames level, plumb and square to the vertical plane, without twist or diagonal racking.

The installer shall provide additional fixing at their discretion such that the frames are provided with all the necessary support against the design wind loading specified and all future superimposed loads which can reasonably be predicted.

The frame shall be packed at the fixing points with the correct size of packing shim prior to fully tightening the fixings, thus allowing thermal movement to occur without over stressing the welded joints or distorting the opening by bowing of the frame. Frame packing shims shall be dense plastic and purpose designed, they shall not be glazing wedges or cut timber.

Expanding foam is not to be used as a primary form of fixing. Its use is only to fill voids or holes and act as a backing for sealants and renders.

The use of self adhering foam tape may only be used as a backing for sealants and renders.

All external perimeters and internal tiled areas shall be sealed with a low modulus natural cure silicone sealant at the abutment between the frame and the surrounding fabric of the structure.

The sealant used shall be of a compatible formula to adhere to PVC-U and building materials ie sand/cement, plaster, timber, tiles etc to BC 5889.

The silicone bead shall be applied evenly and have sufficient contact with both the frame and the structure. Before application, the surfaces must be clean and dry.

Internal sealing, apart from tiled areas, is to be with one part emulsion acrylic sealant.

All protective tapes shall remain intact prior to the silicone sealant being applied. This is to safeguard against damage.

After installation and glazing, all opening sashes are to be adjusted in accordance with hardware suppliers recommendations. All locking points should be checked for engagement with their respective keeps and adjusted where necessary.

Any surface mounted accessories (child locks etc) or remote operating mechanisms are to be fitted after final adjustment of sashes.

The manufacturer and/or installer of the windows shall fully observe all the requirements of the "Trade Standard for UPVC Windows – Issue 2" and the "Code of Practice for the Installation of White High Impact Modified UPVC Windows".

Upon completion the frames may be washed down using neutral household detergents to remove building residue. The use of solvent based cleaners are prohibited.

Frame design and ventilation requirements must conform to approved documents F&C of the updated building regulations as well as CP153.

#### 2.2.20 Profile and Materials

All profiles shall be impact modified PVC-U (unplasticised polyvinyl chloride). The profile shall be multi chambered with an external wall thickness of 3mm, and resistant to chemicals and cement mortar.

The material from which the profiles are made shall consist substantially from white or near white polyvinyl chloride. Only those additives and pigments may be used that are needed for the manufacture of the compound and its subsequent conversion into sound, durable extrusions and good surface finish and mechanical strength, as assessed by the requirements of the "Trade Standard for UPVC Windows – issue 2" published jointly by the British Plastics Federation, 5 Belgrave Square, London, SW1X 8PH and the Glass and Glazing Federation, 44/48 Borough High Street, London, SE1 1XB.

The PVC-U extruder shall operate quality management systems complying with the requirements of the national standard for the quality assurance ISO 9001:2008. The extrusion shall comply with the requirements of, and be extruded in accordance with QAS 4834/18:1987. The tenderer, when returning the tender shall provide written confirmation from BSI that the extrusion meets these requirements.

The windows shall not contain material which by direct contact or otherwise be detrimental to the comfort and safety of the users, or which are liable to emit abnormally toxic products. There shall

be no detrimental reactions from the contact between the window and their fixings or adjoining materials. Where this is likely to occur, the manufacturer shall specify any protection measures he feels are necessary. Protection methods are subject to the approval of the supervising officer.

The main PVC-U profiles shall be multi chambered, with a minimum of three chambers front to back, the centre chamber being for reinforcement, shall be fully sealed at welded joints.

The finish of the profile shall be extruded and white in colour (unless otherwise described).

The cross section of the profile shall conform in shape and dimensions to the manufacturers specification. Surface dimensions shall deviate by no more than +/- 1.5mm.

The colour of the profile shall be uniform and free from foreign bodies, cracks or sink marks when viewed in natural daylight.

The profile shall be straight so that the longitudinal axis of the profile as measured on the face surface shall deviate from the straight line by no more than 1mm/meter.

The main frame and sash profiles shall be permanently marked at 1 meter intervals with an identifying mark which will enable the manufacturers name and date of manufacture of the extrusion to be traced.

The profile shall show no bubbles, cracks or delamination when subjected to ageing as defined by BPF/GGF trade standard issue 2.

The main frame and sash profile shall resist impact at low temperature and no sample, when tested, shall exhibit cracking through the entire wall thickness of the profile.

Profile materials shall be tested in accordance with BS 1006:1987 Part A 03 for the colour fastness and the maximum colour change shall not be more than 3 on the grey scale. It shall be tested in accordance with BS 2782 1976 (ISO R/182 Method A) and shall be stable for not less than 85mm.

All frames shall be classed as self extinguishing and meet the requirements of BS 476 Part 7 for class 1 rating for the surface spread of flames.

No profile shall contain or be produced from reground or reworked material.

#### 2.2.21 Manufacture

All frames are to be manufactured to the BPF/GGF trade standard issue 2. The appointed fabricator shall be (ISO 9001) approved.

All hardware must be compatible with and be approved by the system supplier. The hardware manufacturers/suppliers recommendations relative to the sash sizes and weights must not be exceeded. The moving parts of the windows and doors sets shall have sufficient strength and robustness to withstand incidental static and dynamic loads occurring during use. The overall evaluation will be based on experience from use and be subject to approval of the specifier. Spacing and frequency of locking points shall be as recommended by the system and hardware supplier.

Frames are to be fully welded construction with all welds shadow grooved. All frames are to incorporate internal drainage which must be separate from reinforced chambers.

#### 2.2.22 Handling, Transport and Storage

Windows may be transported either glazed or unglazed. Bay windows prefabricated before delivery to site.

All windows or prefabricated units shall be transported and stacked in a vertical position and properly anchored to prevent movement in transit. Windows shall be separated from each other by adequate packing pieces during transit.

All frames shall be delivered to site protected with a self adhesive tape which shall be left on the frames for as long as possible before removal.

Frames requiring storage on site are to be stored separately, on hard level surfaces and against adequate support. Frames are to be shielded from mechanical damage, splashing by bitumen and are to be secured against wind damage. Hardware is to be protected from sand and mortar.

#### 2.2.23 Couplings

Where couplings and extension profiles ie cills or flanges are used, these shall be through fixed into outer frame ensuring that the fixing has penetrated into the central reinforcement.

Expansion shall be allowed for where certain couplings are incorporated. These couplings shall be sealed with silicon to produce a weathershield.

#### 2.2.24 Temporary Protective Covering

All windows and doors are to have a temporary protective covering which shall remain in position after fixing and the tenderer shall include for returning to site to remove the protective covering and finally cleaning down, frames, transoms, mullions, glazing internally and externally.

### 2.3 **BUILDERS WORK**

The Contractor shall include for any and all builders-work that may be required (making good of fire walls where cables/pipes pass them etc.). All redundant openings as a result of plant removal such as flues etc. are to be made good in accordance with the existing structure.

The Contractor shall be responsible for making good any damage caused to the building, as a result of the Works. Making good to wall and floor finishes where damaged or affected by the works. Decorations and flooring repairs are to be 'patch' only to be taken to nearest appropriate cut off point.

### 2.4 **EXISTING PERMIT TO WORK SYSTEM IN FORCE**

#### 2.4.1 Hot Works

Any working practices that may generate any spark will require a hot works permit from Engie for each working day the operations are undertaken. The contractor must be in possession of this permit issued prior to commencing any such works and be closed off at the end of each day which must include a minimum one hour fire watch following the last of these works. Contractors must not leave site with the permit still open.

#### 2.4.2 Confined Space

Any working practices that require entry into a confined space will require a confined space permit from Engie for each working day the operations are undertaken. The contractor must be in possession of this permit issued prior to commencing any such works and be closed off at the end of each day. Contractors must not leave site with the permit still open



## **SECTION 3**

### **SCOPE OF WORKS**

#### **3.1 EXISTING INSTALLATION**

The existing windows and doors vary from site to site and site visits are essential.

#### **3.2 DESIGN PARAMETERS**

All installations to be compliant with current regulations and applicable British Standards.

##### Energy Rating

All new windows are to have a minimum EPC rating within Band B.

##### Test Result Requirements

All window units shall pass the test result requirements of the following:-

- BS476 Part 7: 1987 Resistance to fire
- BS5368 Part 1: 1985 Air permeability
- BS5368 Part 2: 1980 Water tightness
- BS5368 Part 3: 1985 Wind loading
- BS6375 Part 1: 1989 Weather Resistance Classifications

##### Basic Design Requirements

Windows shall conform to the basic design requirements of BS CP 153:

- Part 1: 1970: Durability and Maintenance
- Part 2: 1972: Sound Insulation
- And BS 8213: Part 1

#### **3.3 ENABLING WORKS**

The contractor shall include within their tender to isolate any electrical supplies affected prior the works and reinstate on completion, by suitably qualified competent engineers. Separate risk assessments and method statements will be required for these enabling works.

SCC have an approved supplier for alarm systems across the Estate, Security Services, and the contractor shall include within the tender for their attendance to disconnect/reconnect any alarm contacts and cabling affected by the works and all co-ordination. Contact details for these purposes 01782 416308.

An alternative to Security Services may be employed only with the written approval from the school Business Manager or equivalent. This approval must be secured prior to tender and all costs included.

#### **3.4 NEW INSTALLATION**

The lifecycle works comprise the replacement of the existing windows and external doors with new in accordance with the specification.

Location of works as detailed within the Pricing Document.

## **L20 DOORS/SHUTTERS/HATCHES**

To be read with Preliminaries/General conditions.

### **PRELIMINARY INFORMATION/REQUIREMENTS**

- 110 EVIDENCE OF PERFORMANCE: Provide independently certified evidence that all specified variants of components comply with specified performance requirements.
- The frames are to comply with all relevant British Standard Specifications, Codes of Practice, and Statutory Requirements (including all revisions and amendments), as well as the guides and recommendations laid down by the relevant trade organisation relating to their performance, constituent materials, methods of assembly and use. Any exceptions to the above are to be advised in writing by the specifier.
  - All frames and other sections to be extruded to BS EN 755-9: 2001, Specification 6060 or 6063 T6.
  - All materials and ancillary products are to be used and fitted entirely in accordance with the instructions of the relevant manufacturer.
- 115 FIRE RESISTING TIMBER DOORS/DOORSETS: Provide evidence, in the form of a product conformity certificate, test report or engineering assessment, that each fire door/doorset supplied will comply with the specified requirements for fire resistance if tested in accordance with BS 476: Part 22. Such certification must cover door and frame materials, glass and glazing materials and installation, essential and ancillary ironmongery, hinges and seals.
- 120 DESIGN, SITE DIMENSIONS AND SURVEY  
Design
- Specialist Contractor shall provide drawings to the Main Contractor depicting all profiles, glazing, weather seals, gaskets fixings and sealants to be used and the relationship of the above to the adjacent structural detail for each door type. Specialist Contractor to design, supply and install any additional steel support required to meet specified blast loads. These calculations to be determined by a qualified blast consultant.
  - Specialist Contractor is to provide drawings showing the relationship of framing to structure, including all profiles, sealants, fixings, trims and weatherseals.
  - Notwithstanding any information within this Specification, all framing and infills shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1997, and imposed loads as defined in BS6399 Pt1: 1996, and the Specialist Contractor shall carry out calculations to demonstrate this.  
NOTE: Calculate inertia value of framing using Biblio/BRE and Table 4 of BS6399Pt1 (HUDLL in Kn/m – column 3). For thickness of glazed infills, refer to BS6180 Table 2 or glass manufacturer's information.
  - Any packing sections or materials required to compensate for misaligned apertures shall be agreed by the Contract Administrator prior to manufacture.
  - Allow for anomalies and variations in the size of the openings, and for out-of-square openings. This is to include for the manufacture of 'specials' as necessary.

## COMPONENTS

### 230 INTERNAL OAK VENEERED FLUSH SOLID CORE DOORS:

- Manufacturer and reference: Contractor's choice
- Core: solid
- Lippings: Hardwood to match facings to long edges
- Moisture content on delivery: 10-14%
- Glazing details: Where noted on door schedule 1150 X 150mm vision panels to be glazed using; toughened glass set Lorient System 36/6 glazing gasket and fitted with bolection mould to match facings, pinned to the door with 12 gauge 40mm long panel pins at 200mm nominal centres. (Not Georgian wired)
- Finish as delivered: Fully polished
- Size: 44 thick x TO SUIT 2100 STRUCTURAL OPENING HEIGHT x width as schedule
- Size: see door schedule
- Fire Rating: As required to comply with regs

### 285 ALUMINIUM DOORS AND ASSOCIATED TOP/SIDE LIGHTS -

- Manufacturer and reference  
Contractors choice
- General: All Doors and frames are to comply with all relevant British Standard Specifications, Codes of Practice, and Statutory Requirements (including all revisions and amendments), as well as the guides and recommendations laid down by the relevant trade organisation relating to their performance, constituent materials, methods of assembly and use. Any exceptions to the above are to be advised in writing by the specifier. All doors and frames are to be extruded to BS EN 755-9: 2001, Specification 6060 or 6063 T6. Aluminium door profiles to be manufactured to BS EN ISO.9001/9002. All framing including mullions, transoms and couplers shall be capable of withstanding the design wind loadings calculated in accordance with BS6399 Pt2: 1995, and the Specialist Contractor shall provide calculations to demonstrate this if requested by the Contract Administrator.
- Appearance: With mid-rails as indicated on architects drawings.
- Glazing details: Glazing to conform to BS.6262 for thickness and type, and to conform to Parts N and L of the Building Regulations. 28mm insulated glass sealed units, using argon fill and warm edge spacer bars to achieve a centre pane value of 1.1 W/m<sup>2</sup>K and tested in accordance with BS.5713: 1979.  
Inner panes to be 6.4mm clear laminated safety glass and outer panes to be 6mm soft coat low-e toughened safety glass  
South facing glass to have a solar tint  
Bottom panel of some doors to have a PPC aluminium insulated solid panel  
All glass and glazing shall conform to:
  - EN 12600: Specification for Impact Performance;
  - BS.6262: Parts 1-6:2005 Code of Practice for Glazing Buildings;
  - BS.952: 1978: Glass for Glazing;
  - BS EN 1279: Glass in buildings. Insulating Glass Units.
  - Part 1: 2004 Generalities, dimensional tolerances and rules for the system description.
  - Part 2: 2005 Long term test method and requirements for moisture penetration
  - Part 3: 2005 Long term test method and requirements for gas leakage rate and for gas concentration tolerances.
  - Part 4: 2002 Methods of test for the physical attributes of edge seals
  - Part 5: 2005 Evaluation of conformity.
  - Part 6: 2002 Factory production control and periodic tests.

- Installation:  
Door framing to be securely fixed direct to the building structure.  
Upon completion of the installation, all glazing, frames, handles and all other surfaces are to be cleaned with a mild detergent. All components are to be checked for security of fixings, adequacy of clearances, adjustment of hinges, locks etc. as may be necessary to leave the door units in good working order.
- Ironmongery:  
All doors to be fitted with Dorma (or equal approved) non-retention closing devices, 5 lever deadlocks, anti-finger trap door stiles and pad handles. Where indicated on architects drawings, panic exit devices Dorma (or similar approved) to be fitted.  
The Specialist Contractor is to obtain the written confirmation of the Contract Administrator as to the type and position of all ironmongery before commencing manufacture.
- Finish: All aluminium sections to be polyester powder coated to BS EN 12206-1:2004, standard RAL 7012 matt finish
- Fixing: Direct fixed through frame into structure with proprietary frame anchors.  
All products to be manufactured and installed strictly in accordance with Reynaers product manuals by approved Reynaers fabricators.

#### 612 FIRE RATED ROLLER SHUTTER TO FOOD TECH ROOM

- Manufacturer: Shellcast 01524 772 425
- Product reference: 60m fire rated
- Arrangement: Vertical
- Size (site measure) however for pricing purposes 2800mm wide x 2500mm high
- Track system: Channel within reveals
- Grille curtain: Steel slat lath 50mm high
- Finish as delivered: PPC white
- Operation: Electrical operation - constant pressure key switch
- Ironmongery: As standard - see general guidance 6.1
- Other requirements: As required to complete installation – interlinked to fire alarm
- Description  
The product is an electrically operated, automatic, vertical, fire shutter, consisting of a steel slatted curtain and galvanised steel box assembly and guide rails. The box, curtain, guide rails and bottom rail can be powder coated as an optional extra.  
The product is powered by a 240v AC motor.  
This product is designed to be a security barrier during normal use and to be closed automatically during a test or an emergency situation. In the event of receiving a fire alarm signal the barrier will perform a controlled descent to create a fire resistant barrier.  
Approved standards  
The fire resistance performance of curtains to BS 476: Part 22: 1987  
The fire resistance performance of curtains to BS EN 1634-1: 2008  
The product was tested and approved by Exova Warringtonfire, report no. 312862
- Curtain  
A single skin 50mm flat steel slat powdercoated white
  - Bottom rail  
'T' sectioned steel bottom slat 49mm high x 74mm deep
  - Guide rails  
3mm thick galvanised steel channels 50mm or 65mm deep, depending upon shutter width mounted on steel angles for fixing.
- Shutter Box  
PPC steel endplates welded to the top of the Guides in a flag arrangement with a two piece box assembly. Boxes are supplied in sleeved sections to allow for expansion in 250mm, 300mm and 350mm sizes depending upon shutter height.
- Axles  
101.6mm (1.6mm), 101.6mm (3.2mm) 5", 5½" or 6 5/8" round steel barrels are used depending on the products size.
  - Motors & control options

The fire curtain is powered using a 240V AC tubular motor which is supplied as standard with a 2.5m 4 core cable.

o Individual Battery Backup with fire alarm interface relay

Optional extras:

Emergency retract switches can be connected to the panels using a 24v DC supply from the panel.

Key switch

Manual over ride

Installation options

The curtains must be fixed to appropriate masonry/concrete or steel supporting constructions that have a fire resistance of at least that specified for the fire curtain and are capable of maintaining adequate support for the required periods

The box and the guide rails are to be reveal fitted.

Fixing method to masonry/concrete surround

M10 Fischer FSA sleeve anchors with steel and nylon washers at a maximum spacing of 650mm along the full height of the Guide Angle. 100mm long fixings would cover all conditions, however as a minimum for a rating up to 2 hours they should be 70mm long, and 85mm for up to 4 hours.

615 ROLLER SHUTTER TO SERVERY OFF MAIN HALL

- Manufacturer: Shellcast 01524 772 425

- Product reference: **SeceuroDoor Vision 75**

- Arrangement: Vertical

- Size (site measure) however for pricing purposes 4600mm wide x 2500mm high

- Track system: Channel within reveals

- Grille curtain: SeceuroVision75 uses single skin scrolled perforated / punched steel slat Nominally 75mm high x 19mm thick PPC white with 150mm x 25mm regular punched hole with 50mm space with in line configuration.

- Operation: Electrical operation - constant pressure key switch

- Ironmongery: As standard - see general guidance 6.1

- Other requirements: As required to complete installation.

## INSTALLATION

- 710 PROTECTION OF COMPONENTS: Do not deliver to site components which cannot be put immediately into suitable dry, floored and covered storage. Stack on bearers, separated with spacers to prevent damage by and to projecting ironmongery, beads, etc.
- 720 MOISTURE CONTENT: During delivery, storage, fixing and thereafter to Practical Completion maintain conditions of temperature and humidity to suit specified moisture content(s) of timber components. When instructed by CA, test components with an approved electrical moisture meter used in accordance with manufacturer's recommendations.
- 730 PRIMING/SEALING: Before fixing components ensure that surfaces of timber which will be inaccessible after installation are primed or sealed as specified.
- 740 CORROSION PROTECTION  
Before fixing, apply two coats of bitumen solution to BS6949 or an approved mastic impregnated tape, to surfaces of aluminium components which will come into contact with the following:-  
Timber treated with copper, zinc or mercury based preservatives.  
Oak, sweet chestnut, douglas fir and western red cedar, unless well seasoned.  
Iron and steel unless galvanised.  
Copper or copper alloys and rainwater, which has run over them.  
Concrete, mortar or plasters, especially when embedded  
Soil.  
Paints containing copper or mercury based fungicides, graphite or lead  
Lead stainless steel in heavily polluted atmospheres.
- 760 BUILDING IN will not be permitted except where specifically stated.
- 765 DOOR INSTALLATION  
Install doors into prepared openings, maintaining a maximum gap of 10mm between the frame edge and the surrounding construction. Install doors without twists or diagonal racking. Doors must be manufactured and installed by a Reynaers approved company.
- 770 BUILDING IN TIMBER FRAMES: Fix dpcs with galvanized clout nails to backs of frames which are to be built into external openings.
- 775 PREPARED OPENINGS:  
Ensure that DPCS and thermabate insulated cavity closers are positioned correctly in relation to frames and are not displaced during fixing operations.
- 782 FIXING OF ALUMINIUM FRAMES  
As section Z20 using cramps, straps, screws or expanding bolts or other materials necessary for fixing to be supplied by the window manufacturer  
When not predrilled or specified otherwise, position fixings not more than 200mm from each end of jamb, adjacent to each hanging point of opening lights, and at maximum 700mm centres. Refer to the Reynaers manual for details.
- 790 FIXING CENTRES FOR TIMBER FRAMES: When not predrilled or specified otherwise, position fixings 150 mm from each end of jamb, adjacent to each hanging point and at 600 mm maximum centres.

- 809 FIRE RESISTING DOORS/DOORSETS must be installed by a firm currently listed in the FIRAS Register of Accredited Installers, in accordance with instructions supplied with the product conformity certificate, test report or engineering assessment.
- 810 FIRE RESISTING DOORS/DOORSETS:  
Sealant manufacturer and reference: Adshead Ratcliffe Arbosil 1096 or equal and approved.  
Colour: TBA
- Prepare joints and apply sealant as section Z22.
- 820 SEALANT JOINTS:
- Sealant manufacturer and reference: To contractor's choice
  - Colour: To match frame/to be advised
  - Prepare joints and apply sealant as section Z22.
- 830 FIXING IRONMONGERY GENERALLY:
- Assemble and fix carefully and accurately using fasteners supplied by the ironmongery manufacturer, with matching finish and equivalent corrosion resistance.
  - Holes for components to be no larger than the minimum required for satisfactory fit/operation.
  - Protect ironmongery and adjacent surfaces as necessary to prevent damage.
  - At completion, check, adjust and lubricate as necessary to ensure correct functioning of all moving parts.
- 840 FIXING IRONMONGERY TO FIRE RESISTING DOOR ASSEMBLIES:- Fix all items in accordance with door leaf manufacturer's recommendations.
- Ensure that, when fixed, ironmongery does not compromise the integrity of the assembly as established by testing/ assessment.
  - Cut holes for through fixings and components accurately. Clearances must not be greater than 8 mm unless protected by intumescent paste or similar.
  - Coat lock/latch cases for FD60 doors with intumescent paint or paste before fitting.
- 850 LOCATION OF HINGES:
- Where not specified otherwise, position hinges with centre lines 250 mm from top and bottom of door leaf.
  - Position third hinge (where specified) centre
  - Position hinges for fire resisting doors in accordance with door leaf manufacturer's recommendations.
- 860 EMERGENCY EXIT DEVICES: Unless specified otherwise, install panic bolts/latches in accordance with BS 5725:Part 1, Appendix B.

**L40 GENERAL GLAZING**

To be read with Preliminaries/General conditions.

**GENERAL REQUIREMENTS**

- 150 WORKMANSHIP GENERALLY:
- Glazing generally: to BS 6262.
  - The glazing must be wind and watertight under all conditions with full allowance made for deflections and other movements.
  - Panes/sheets to be within  $\pm 2$  mm of specified dimensions.
  - Avoid contact between glazing panes/units and alkaline materials such as cement and lime.
  - Keep materials dry until fixed. Keep insulating glass units and plastics glazing sheets protected from the sun and away from heat sources.
  - Ensure that glass/plastics, surround materials, sealers primers and paints/clear finishes to be used together are compatible. Comply with glazing and sealant manufacturers' recommendations.
- 152 PREPARATION: Clean surrounds, rebates, grooves and beads, and prepare as specified before installing glazing.
- 180 BEAD FIXING WITH PINS: Space pins evenly at not more than 150 mm centres, and within 50 mm of each corner. Punch pins just below the timber surface.
- 181 BEAD FIXING WITH SCREWS: Space screws evenly at not more than 225 mm centres, and within 75 mm of each corner.

**TYPES OF GLAZING**

- 230 BEAD FIXED SINGLE GLAZING TO INTERNAL NON-FIRE RATED AND FD30S DOORS:
- Locations: As Door Schedule.
  - Pane material: CGI International Ltd 7mm thick Pyroguard 30 minute clear toughened fire resistant glass.
  - Surround/bead: Softwood frames with hardwood beads.
    - Preparation: To manufacturer's details.
    - Bead location: Inside.
    - Bead fixing: Secret fixed.
  - Glazing seal: Intumescent Seals, Therm-a-Glaze 30 (2 part system).
  - Glazing installation:
    - Glass: Located centrally in surround using setting and location blocks and distance pieces.
    - Beads: Fixed securely with pins.
- 231 BEAD FIXED SINGLE GLAZING TO INTERNAL FD60S DOORS & SCREENS:
- Locations: As Door and Screen Schedules.
  - Pane material: CGI International Ltd 11mm thick Pyroguard 60 minute clear toughened fire resistant glass.
  - Surround/bead: Hardwood frames with hardwood beads.
    - Preparation: To manufacturer's details.
    - Bead location: Inside.
    - Bead fixing: Secret fixed.
  - Glazing seal: Intumescent Seals, Therm-a-Glaze 60 (3 part system).
  - Glazing installation:
    - Glass: Located centrally in surround using setting and location blocks and distance pieces.
    - Beads: On glazing liner fixed securely with pins.



630 MANIFESTATION TO ENTRANCE DOORS

- Location: All external glazed doors
- Art Work: Dots each 50mm diameter at 100mm centres, (colour to be agreed but to give 30 point contrast to achieve DDA requirements)
- Technique: Self adhesive opaque Vinyl

**M50 RUBBER/ PLASTICS/ CORK/ LINO/ CARPET TILING/ SHEETING**

To be read with Preliminaries/ General conditions.

**TYPES OF COVERING**

**110 PVCu SPLASHBACKS ABOVE WASH HAND BASINS, SINKS & KITCHENETTE/FOOD TECH WORKSURFACE**

- Substrate: - Sheet: Extruded semi-rigid PVCu sheet, EU Grade
- Maximum service temp: 60°C
- Fire rating: BS 476 Part 7 (1987) surface spread of flame - Class 1
- BS 476 Part 6 (1989) fire propagation - Class 0\* (\*when fixed to a non-combustible substrate)
- EN13501-1 B-s3, d0
- Manufacturer / Product reference: Altro Whiterock™ White W103/W104 hygienic wall cladding by Altro Limited,
- 300mm height
- Adhesive: AltroFix™ W139

**115 STAINLESS STEEL SPLASHBACKS ABOVE COOKERS IN FOOD TECH**

<b>Manufacturer</b>	Hafele
<b>Colour</b>	Stainless Steel
<b>Construction Material (Kitchens)</b>	Stainless Steel
<b>Finish</b>	Satin
<b>Fixings Supplied</b>	Fixings Not Supplied
<b>Manufacturer Guarantee</b>	1 Year Guarantee
<b>Pack Size</b>	1
<b>Parent Colour</b>	Silver
<b>Pieces in Pack/Case</b>	1
<b>Product Height</b>	750 mm
<b>Product Thickness</b>	8 mm
<b>Product Type</b>	Catering Grade Splashback
<b>Product Width</b>	600 mm

**120 PVC CLADDING TO WALLS IN KITCHEN-**

- Substrate: - Sheet: Extruded semi-rigid PVCu sheet, EU Grade
- Maximum service temp: 60°C
- Fire rating: BS 476 Part 7 (1987) surface spread of flame - Class 1
- BS 476 Part 6 (1989) fire propagation - Class 0\* (\*when fixed to a non-combustible substrate)
- EN13501-1 B-s3, d0
- Manufacturer / Product reference: Altro Whiterock™ White W103/W104 hygienic wall cladding by Altro Limited,
- Full height
- Adhesive: AltroFix™ W139

**130 BARRIER MATTING CARPET TILES**

- Carpet: cut pile 'scraper fibre' barrier carpeting  
Manufacturer and reference: Heckmondwicke Battleship/Hippo  
Tile sizes:500 by 500  
Colour/pattern: colour to be agreed
  - Adhesive (and primer if recommended by manufacturer):  
Contractor's Choice in accordance with manufacturers recommendations
- 135 CARPET TILES
- Carpet: cut pile 'tufted' structured loop pile  
Manufacturer and reference: Modulus First Contract  
Width: 500 x 500mm.  
Colour/pattern: to be agreed
  - Adhesive (and primer if recommended by manufacturer): To existing areas allow for latex levelling compound as necessary.  
Contractor's Choice in accordance with manufacturers recommendations
- 150 VINYL SHEET FLOORING:
- Manufacturer and reference: Polyfloor Wood FX  
BS EN 685 class 34 Commercial.  
Colour/pattern: To be confirmed.
- Adhesive (and primer if recommended by manufacturer): To manufacturers recommendations as clause 461, 466 and 640.
  - Seam welding: Butt jointed
  - Accessories: Threshold cover strips as clause 740.
- 155 VINYL SLIP RESISTANT SHEET FLOORING TO FOOD TECH AND KITCHEN AREAS
- Manufacturer and reference: Tarkett Primo Safe. T  
BS EN 685 class 34 Commercial.  
Colour/pattern: To be confirmed.
- Adhesive (and primer if recommended by manufacturer): To manufacturers recommendations as clause 461, 466 and 640.  
Note: In areas where existing quarry tiles are to be taken up allow for latex levelling screed to provide a smooth level sound substrate.
  - Seam welding: Butt jointed
  - Accessories: Threshold cover strips as clause 740.  
Allow for capping strips where coved former brings the sheet flooring up the wall to skirting height. Capping type to be selected as necessary to interface with a painted plaster wall or a whiterock clad wall to suit.

## **GENERAL REQUIREMENTS**

- 210 WORKMANSHIP GENERALLY
- Base condition after preparation: Rigid, dry, sound, smooth and free from grease, dirt and other contaminants.
  - Finished coverings: Accurately fitted, tightly jointed, securely bonded, smooth and free from air bubbles, rippling, adhesive marks and stains.
- 250 LAYOUT - ROLL MATERIALS
- Setting out of seams: Agree setting out for sheeting types M50/150
- 330 COMMENCEMENT
- Required condition of works prior to laying materials:
    - Building is weathertight and well dried out.
    - Wet trades have finished work.
    - Paintwork is finished and dry.
    - Conflicting overhead work is complete.

- Floor service outlets, duct covers and other fixtures around which materials are to be cut are fixed.
  - Notification: Submit not less than 48 hours before commencing laying.
- 340 CONDITIONING
- Prior to laying: Condition materials by unpacking and separating in spaces where they are to be laid. Maintain resilient flooring rolls in an upright position. Unroll carpet and keep flat on a supporting surface.
  - Conditioning time and temperature (minimum): As recommended by manufacturer with time extended by a factor of two for materials stored or transported at a temperature of less than 10°C immediately prior to laying.
- 350 ENVIRONMENT
- Temperature and humidity: Before, during and after laying, maintain approximately at levels which will prevail after building is occupied.
  - Ventilation: Before during and after laying, maintain adequate provision.

### **PREPARING BASES**

- 410 SUITABILITY OF NEW BASES AND CONDITIONS: Laying of coverings will be taken as joint acceptance by the Main Contractor and Sub-contractor of the suitability of the bases and conditions within any given area.
- 412 MECHANICAL PREPARATION TO NEW BASES: Prepare all surfaces by machine shot-blasting/scarifying techniques to provide a clean, sound, smooth, contaminate free power floated concrete slab/sand cement screed surface free from curing agents, additives and alike to leave a fine textured surface. Remove all traces of dust and debris with industrial vacuum.
- 430 DAMPNESS: Where coverings are to be laid on new wet-laid bases:
- Ensure that drying aids have been turned off for not less than 4 days, then
  - Test for moisture content using an accurately calibrated hygrometer in accordance with BS 5325, Appendix A or BS 8203, Appendix A.
  - Take readings in all corners, along edges, and at various points over the area being tested.
  - Do not lay coverings until all readings show 75% relative humidity or less.
- 440 SUITABLE SUBSTRATES: GENERAL The specifications for finishes to receive PVCu wall cladding require: - Good quality fairfaced brick or blockwork. Well aligned joints bagged up flush. Straight to within 3mm over a 2m straight edge and bricks/blocks flush with ones adjacent. - Sand & cement rendering 1:3 to steel trowel finish. - 12.5mm thick plasterboard. (do not seal with sealers as for decorating). If wall is affords fire protection ensure joints between plasterboard sheets filled with appropriate fillers. - Minimum 9mm W.B.P. resin bonded plywood fixed at 200mm centres to suitable studwork or direct to solid substrate. - Minimum 9mm MDF dense wood based panels fixed at 200mm centres to suitable studwork, or direct to solid substrate. - Ceramic tiles which are clean and securely bonded to substrate. - Certain sound painted surfaces (an adhesive test is advisable to ascertain compatibility). - Plastered surfaces - finished with steel trowel. (pink lightweight plasters generally not suitable). - Porous surfaces to be thoroughly sealed with diluted PVA applied to the surface 12 hours prior to the installation. The sealer should be used in a diluted ratio of 1:10. Alternatively use Altro Primer Seal Ref: AGCPNF/01
- 440A SUITABLE SUBSTRATES - WELDED FINISH: - Surface straight to within 3mm over a 2m straight edge. - Sand & cement rendering 1:3 to steel trowel finish. - 12.5mm thick plasterboard. (do not seal with sealers as for decorating). If wall is affords fire protection ensure joints between plasterboard sheets filled with appropriate fillers. - Minimum 9mm W.B.P. resin bonded plywood fixed at 200mm centres to suitable studwork or direct to solid substrate. - Minimum 9mm MDF dense wood based panels fixed at 200mm centres to suitable studwork or direct to solid

substrate. - Ceramic tiles which are clean securely bonded to the substrate and are level and true without any undulations or raised edges - Certain sound painted surfaces (an adhesive test is advisable to ascertain compatibility). - Plastered surfaces - finished with steel trowel. (pink lightweight plasters generally not suitable). - Porous surfaces to be thoroughly sealed with diluted PVA applied to the surface 12 hours prior to the installation. The sealer should be used in a diluted ratio of 1:10. Alternatively use Altro Primer Seal Ref: AGCPNF/01

- 440B SUBSTRATES: The specification for trowelled finishes to receive thin floor coverings require:
- A uniform, smooth surface free from trowel marks and other blemishes, and suitable to receive the specified floor finish material.
  - Adequate protection from construction traffic.
  - Allowance for making good by application of a smoothing compound by and to the satisfaction of the flooring subcontractor in the event of the surface being unsuitable due to inadequate finishing or protection.
- 461 VAPOUR SUPPRESSANT AND SURFACE DAMP PROOF MEMBRANE:  
For a moisture content of up to 97% relative humidity. Apply Tremco ES100 damp proof membrane by means of 2mm x 5mm notched trowel. Whilst Tremco ES100 is still wet flatten out the serration ridges with a long handles roller, initially pre-wetted in Tremco ES100 to a thickness of 350 microns. Allow to dry per manufacturers instructions. Prime the cured Tremco ES100 damp proof membrane with Tremco CS100 and allow to dry as per manufacturers instructions.
- 466 SMOOTHING UNDERLAYMENT COMPOUND: Protein-free cement type recommended for the purpose by the manufacturer. Mix and lay in accordance with manufacturer's instructions.
- 470 SUBSTRATE PREPARATION - EXISTING WALL FINISH TO BE REMOVED: - All loose paint and dust to be removed. - Friable surfaces should be removed or made sound. (Please consult Altro regarding approved sealing treatments) - Make good as needed by local patching or filling with a repair mortar or sand and cement with Unibond mix, to give a smooth, even surface. - Straight to within 3mm over a 2m straight edge
- 480 EXISTING WALL FINISH TO BE OVERLAID: - Make good as needed by local patching or filling with a repair mortar or sand and cement with Unibond mix, to give a smooth, even surface. - Ceramic tiles should be thoroughly degreased, using suitable degreasing agent and scouring pad, rinsed with clean water and allowed to dry. Tiles should be abraded with diamond disc and all dust removed. Loose tiles should be removed and the area made good using Ardurapid 45 repair mortar or sand and cement with Unibond mix, if drying time permits. Alternatively, suitable thickness WBP plywood, screwed and plugged, (maximum 200mm centres) may be used.

## LAYING COVERINGS

- 610 SETTING OUT TILES
- Method: Set out from centre of area/ room so that, wherever possible:
    - Tiles along opposite edges are of equal size.
    - Edge tiles are more than 50% of full tile width.
- 640 ADHESIVE FIXING GENERALLY
- Adhesive type: As specified, as recommended by covering/ underlay manufacturer or as approved.
  - Primer: Type and usage as recommended by adhesive manufacturer.
  - Application: As necessary to achieve good bond.
  - Finished surface: Free from trowel ridges, high spots caused by particles on the substrate, and other irregularities.

- 641A ADHESIVE FIXING – BY ALTROFIX W139: - Use AltroFix W139 (Ref: A814) two-part polyurethane adhesive spread with a 5mm square notched trowel (Ref: A860). - On application immediately apply sheet to the wall. - Support the panel on double sided tape (Ref: A815 or A915 or welded system) whilst adhesive cures (approx. 3-5 hours - full cure 24 hours).
- 641C ADHESIVE FIXING – BY ALTROFIX W157: NB. This adhesive is only suitable for porous surfaces, for non-porous surfaces refer to AltroFix W139 or AltroFix W639 MS - Apply AltroFix W157 (Ref: A818) water based synthetic polymer adhesive to the back of the sheet using a 3mm deep x 5mm wide square notched trowel (Ref: A860/4). - On application immediately apply sheet to the wall. - Support the panel on double sided tape (Ref: A815 or A915 or welded system) whilst adhesive cures. (can be 24hours and upwards) NB. On completion, the installation should not be subject to an increase in ambient temperature to more than 30°C until the adhesive is fully cured. Full cure will be dependent on porosity of substrate.
- 680 SEAM WELDING COVERINGS: - Do not commence welding of coverings until a minimum of 24 hours after fitting or until adhesive has completely set. - Use Altro double sided tape (Ref: A915) applied to the wall bridging the joint to be welded. Bring the edges of the sheets to be welded together leaving a 1.5mm - 2mm gap between sheets. Hot weld using hot air welding gun and Altro Whiterock welding rod. Clean off flush with sheet face to form a neat, smooth, strongly bonded joint. Recommended tool is Mozart trimming knife.
- 720 DOORWAYS  
- Joint location: On centre line of door leaf.
- 731 SEALANT: - Manufacturer and reference: Altro Whiterock silicone sealant (Ref: A802 white or A806 coloured) contact Altro Limited, telephone +44(0)1462 707600, fax +44 (0)1462 707515, email enquiries@altro.com
- 740 EDGINGS/COVER STRIPS: ALTRO PVC JOINT STRIP - All joints should be covered with high impact PVCu 'H' joint sections (Ref: A831 two-part joint trim, or G831 single part joint trim). - Internal/external corners: Altro Whiterock to be thermoformed on-site as needed, so limiting the number of joints required. - Vulnerable external corners are usually over-clad with stainless steel corner protectors, to a height of 1200mm.
- 740A EDGINGS/COVER STRIPS: ALTRO FLEXIJOINT - Double sided tapes (Ref: A815) applied 3mm in from the edge of the panel - Install the panels with a specific joint gap of 3.4mm (utilising Altro spacer bars). - Apply a uniform (2mm) bead of Altro AP600 polymer sealant to the substrate within the joint gap. - Fit Altro FlexiJoint (FJ01) into the joint gap and roll with a small wooden hand roller → See Altro Whiterock detail drawing W11. - Internal/external corners: Altro Whiterock to be thermoformed on-site, so limiting the number of joints required. - Vulnerable external corners are usually over-clad with stainless steel corner protectors, to a height of 1200mm.
- 740B EDGINGS/COVER STRIPS: ALTRO SILICONE JOINT - Form a flush joint using a 3-4mm bead of Altro Whiterock silicone sealant. (Ref: A802 white, or A806 coloured). - Internal/external corners: Altro Whiterock to be thermoformed on-site, so reducing the number of joints needed. - Vulnerable external corners are usually over-clad with stainless steel corner protectors, to a height of 1200mm.
- 740C EDGINGS/COVER STRIPS: ACCESSORIES - High impact PVCu two-part start and edge trim (Ref: A833) - High impact PVCu single part heavy duty start and edge trim (Ref: G833). - White powder coated aluminium 'H' joint sections (Ref: A854) - White powder coated aluminium start and edge trim (Ref: A853/25).

740D EDGINGS AND COVER STRIPS TO FLOORING

- Manufacturer: Gradus
- Material/ finish: Aluminium.
- Special requirements: Check if feathering of screed is required.
- Fixing: Secure with edge of covering gripped. Use matching fasteners where exposed to view.

773 ABUTMENTS: GENERAL - To window frame, door frames, architraves, ceiling & quarry tile - seal with Altro Whiterock silicone sealant (Ref: A802 white, or A806 coloured) 3-4mm width joint. → See Altro Whiterock detail drawings W1, W2 and WF3.

773A ABUTMENTS: TREATMENT TO SERVICE PREPARATIONS - All holes to be cut to allow 3-4mm silicone seal around all penetrations. seal with Altro Whiterock silicone sealant (Ref: A802 white or A806 coloured).

773B ABUTMENTS: PVC FLOORING - To PVC flooring with coved skirting - joint to be covered with high impact PVCu transition strip (Ref: A832 two-part trim, or G832 single part trim). → Ask for Altro Whiterock detail drawing WF2. - Alternatively use Altro concealed wall/floor transition strip with overlap detail (Ref G835 / 25) mechanically fixed or bonded to the wall with adhesive (Ref Altro AP600). → Ask for relevant Altro Whiterock detail drawing

**COMPLETION**

810 CLEANING GENERALLY: - Remove all scrap, dust and dirt. Carefully remove adhesive and other marks from coverings and adjacent surfaces, using approved cleaning agents and methods. - When cleaning the Whiterock surface, the temperature should not exceed 60 degrees Centigrade. - Do not use cleaning materials of an abrasive nature → Contact Altro for detailed cleaning instructions: Altro Limited, tel: +44(0)1462 707600, fax: +44 (0)1462 707515, email: enquiries@altro.com

820 FINISHING All

- Cleaning operations:
  - Wash floor with water containing neutral (pH 6-9) detergent. If necessary, lightly scrub heavily soiled areas.
  - Rinse with clean water, removing surplus to prevent damage to adhesive. Allow to dry.
- Emulsion polish: Two coats of a type recommended by covering manufacturer.

870 PROTECTION: If required, tape appropriate protective material to sheet ensuring compliance with surface spread of flame, as per Building Regulations.

880 WASTE

- Spare covering material: Retain suitable material for patching. On completion submit pieces for selection. Hand over selected pieces to Employer.

**M60 PAINTING/ CLEAR FINISHING**

To be read with Preliminaries/ General conditions.

**COATING SYSTEMS**

- 151 EGGHELL FOR WALLS, CEILINGS
- Manufacturer: As clause 210.
  - Surfaces: Plaster/plasterboard and timber
  - Preparation: As clauses 400 and or 590, as applicable.
  - Finishing coats: Two coats of Emulsion

- 152 GLOSS FOR CILL BOARDS / SKIRTINGS ETC
- Manufacturer: As clause 210.
  - Surfaces: Timber & MDF
  - Preparation: As clauses 400 and/or 590 as applicable.
  - Finishing Coats: Two coats of gloss.

**GENERAL**

- 210 COATING MATERIALS
- Manufacturers: Obtain materials from any of the following: Johnstones or Dulux.
  - Selected manufacturers: Submit names before commencement of coating work.
- 215 HANDLING AND STORAGE
- Coating materials: Deliver in sealed containers, labelled clearly with brand name, type of material and manufacturer's batch number.
  - Materials from more than one batch: Store separately. Allocate to distinct parts or areas of the work.
- 240 SURFACES NOT TO BE COATED
- Ironmongery, sockets, plastic boxes, sanitary fittings.
- 280 PROTECTION
- 'Wet paint' signs and barriers: Provide where necessary to protect other operatives and general public, and to prevent damage to freshly applied coatings.
- 290 VOC CRITERIA
- European standard - To BS EN 13300:2001  
Emission level required - VOC content (testing requirement 6)  
Fungal and algal resistant



## PREPARATION

### 400 PREPARATION GENERALLY

- Standard: In accordance with BS 6150.
- Suspected existing hazardous materials: Prepare risk assessments and method statements covering operations, disposal of waste, containment, and reoccupation, and obtain approval before commencing work.
- Preparation materials: Types recommended by their manufacturers and the coating manufacturer for the situation and surfaces being prepared.
- Substrates: Sufficiently dry in depth to suit coating.
- Efflorescence salts: Remove.
- Dirt, grease and oil: Remove. Give notice if contamination of surfaces/ substrates has occurred.
- Surface irregularities: Remove.
- Joints, cracks, holes and other depressions: Fill flush with surface, provide smooth finish.
- Dust, particles and residues from preparation: Remove and dispose of safely.
- Water based stoppers and fillers:
  - Apply before priming unless recommended otherwise by manufacturer.
  - If applied after priming: Patch prime.
- Oil based stoppers and fillers: Apply after priming.
- Doors, opening windows and other moving parts:
  - Ease, if necessary, before coating.
  - Prime resulting bare areas.

### 420 FIXTURES AND FITTINGS

- Removal: Before commencing work remove
- Replacement: Refurbish as necessary, refit when coating is dry.

### 425 IRONMONGERY

- Removal: Before commencing work remove ironmongery from surfaces to be coated.
- Replacement: Refurbish as necessary; refit when coating is dry.

### 430 EXISTING IRONMONGERY

- Refurbishment: Remove old coating marks. Clean and polish.

### 471 PREPRIMED WOOD

- Areas of defective primer: Take back to barewood and reprime.

### 481 UNCOATED WOOD

- General: Provide smooth, even finish with arrises and moulding edges lightly rounded or eased.
- Heads of fasteners: Countersink sufficient to hold stoppers/ fillers.
- Resinous areas and knots: Apply two coats of knotting.

### 490 PREVIOUSLY COATED STEEL

- Defective paintwork: Remove to leave a firm edge and clean bright metal.
- Sound paintwork: Provide key for subsequent coats.
- Corrosion and loose scale: Take back to bare metal.
- Residual rust: Treat with a proprietary removal solution.
- Bare metal: Apply primer as soon as possible.
- Remaining areas: Degrease.

### 500 PREPRIMED STEEL

- Areas of defective primer, corrosion and loose scale: Take back to bare metal. Reprime as soon as possible.

- 511 GALVANIZED, SHERARDIZED AND ELECTROPLATED STEEL
- White rust: Remove.
  - Pretreatment: Apply one of the following:
    - 'T wash'/ mordant solution to blacken whole surface.
    - Etching primer recommended by coating system manufacturer.
- 521 UNCOATED STEEL - MANUAL CLEANING
- Oil and grease: Remove.
  - Corrosion, loose scale, welding slag and spatter: Remove.
  - Residual rust: Treat with a proprietary removal solution.
  - Primer: Apply as soon as possible.
- 541 UNCOATED ALUMINIUM/ COPPER/ LEAD
- Surface corrosion: Remove, and lightly key surface.
  - Pretreatment: Etching primer, if recommended by coating system manufacturer.
- 552 UNCOATED PVC-U
- Dirt and grease: Remove. Do not abrade surface.
- 570 UNCOATED MASONRY/ RENDERING
- Loose and flaking material: remove.
- 580 UNCOATED PLASTER
- Nibs, trowel marks and plaster splashes: Scrape off.
  - Overtrowelled 'polished' areas: Key lightly.
- 590 UNCOATED PLASTERBOARD
- Depressions around fixings: Fill with stopper/ filler.
- 601 UNCOATED PLASTERBOARD - TO RECEIVE TEXTURED COATING
- Joints: Fill, tape and feather out with materials recommended by textured coating manufacturer.
- 611 WALL COVERINGS
- Retained wall coverings: Check that they are in good condition and well adhered to substrate.
  - Previously covered walls: Wash down to remove paper residues, adhesive and size.
- 645 SEALING OF INTERNAL MOVEMENT JOINTS
- General: To junctions of walls and ceilings with architraves, skirtings and other trims.
  - Sealant: Water based acrylic.

## APPLICATION

### 711 COATING GENERALLY

- Application: In accordance with BS 6150, clause 9.
- Conditions: Maintain suitable temperature, humidity and air quality during application and drying.
- Surfaces: Clean and dry at time of application.
- Thinning and intermixing of coatings: Not permitted unless recommended by manufacturer.
- Overpainting: Do not paint over intumescent strips or silicone mastics.
- Priming coats:
  - Thickness: To suit surface porosity.
  - Application: As soon as possible on same day as preparation is completed.
- Finish:
  - Even, smooth and of uniform colour.
  - Free from brush marks, sags, runs and other defects.
  - Cut in neatly.
- Doors, opening windows and other moving parts: Ease before coating and between coats.

### 730 WORKSHOP COATING OF CONCEALED JOINERY SURFACES

- General: Apply coatings to all surfaces of components.

### 731 SITE COATING OF CONCEALED JOINERY SURFACES

- General: After priming, apply additional coatings to surfaces that will be concealed when fixed in place.

### 740 CONCEALED METAL SURFACES

- General: Apply additional coatings to surfaces that will be concealed when component is fixed in place.

### 751 STAINING WOOD

- Primer: Apply, if recommended by stain manufacturer.
- Application: Apply in flowing coats and brush out excess stain to produce uniform appearance.

### 760 VARNISHING WOOD

- First coat - Brush well in and lay off avoiding aeration.
- Subsequent coats: Rub down lightly along the grain between coats.

### 780 BEAD GLAZING TO COATED WOOD

- Before glazing: Apply first two coats to rebates and beads.

## **N10 GENERAL FIXTURES/FURNISHINGS/EQUIPMENT**

To be read with Preliminaries/General conditions.

### **COMPONENTS**

- 111 ALUMINIUM FRAMED SUNDEALA PIN BOARD  
2.4m x 1.2m
- 112 SPUR SHELVING  
300mm wide shelves (4 tier high) White Contiboard  
PPC White upright at max 900mm centres.
- 113 COAT PEGS  
120mm x 20mm SW painted backboard. SAA 'J' pegs at 150mm centres.
- 160 BENCHES AND LINKED SEATS IN LOBBY OF MODULAR CLASSROOM BLOCK
- Manufacturer: Broxap or similar approved
    - Product reference: BXCF/WS
  - Seat/ Back:
    - 4 slat 400mm wide bench with 3 slat shelf under for shoe storage
    - Material: Seasoned knot free beech timber with chamfered edges
    - Finish/ Colour: Clear varnish (Factory applied)
  - Frame:
    - 380mm high
    - Material: SHS steel
    - Finish/ Colour: PPC colour to be confirmed
  - Fixing: Bolted to floor and wall
- 170 LOCKS TO KITCHEN CUPBOARDS (WALL AND BASE UNITS) AND DRAWS  
Key operated camlocks by Essentra tel 0845 758 5070 ref 491524 or similar approved) barrel to be set into door panel latch of camlock to lock into cut out in cupboard frame or against section of timber fillet mech fixed to inside face of cupboard carcass
- 240 WINDOW BLINDS  
Product reference: Contractors choice  
Type: White coloured PVC vertical Venetian Blinds  
Contractor to propose  
Arrangement Stack at one end  
Fixing brackets: Wall fix (face fix)  
Projection to be advised  
Bottom weights Chain linked - Standard.  
Cord/ chain retainers Required – Of a type to reduce ligature risk

270 MIRRORS OVER EVERY WASH HAND BASINS:

- Manufacturer: Contractors choice
- Reference: Toughened glass
- Sizes: 900 x 650mm
  
- Nb. Allow for fitting mirrors that come as part of Doc M packs
- Quality: Free from tarnishing, discoloration, scratches and other defects visible in the designed viewing conditions. Reflection undistorted.
- Fixing: SECS4 Anti tamper screws.
- Installation: Accurately with sides vertical.
- Other requirements: Shatter resistant.

**INSTALLATION**

710 MOISTURE CONTENT: During delivery, storage, fixing and thereafter to practical completion maintain conditions of temperature and humidity to suit specified moisture content(s) of timber components. When instructed by CA, test components with an approved moisture meter to manufacturer's recommendations.

720 INSTALLATION GENERALLY: Methods of fixing and fastenings to be as section Z20 unless specified otherwise.

760 SEALANT POINTING:

- Sealant: Silicone based to BS 5889, Type B with fungicide.  
Colour: white  
Manufacturer and reference: Contractors choice
- Application: As section Z22.

770 TRIMS: Wherever possible to be in unjointed lengths between angles or ends of runs. Where running joints are unavoidable obtain approval of location and method of jointing. Mitre angle joints unless otherwise specified.

780 COMPLETION:

- Ensure that doors and drawers are accurately aligned and do not bind. Adjust as necessary to ensure smooth operation.
- Check, adjust and lubricate ironmongery as necessary to ensure correct functioning.

## **N11 DOMESTIC KITCHEN FITTINGS, FURNISHINGS AND EQUIPMENT**

To be read with Preliminaries and General Conditions.

### **PRODUCTS**

: Manufacturer and product reference for benchmark pricing purposes only.  
Contract administrator will consider equal and alternative specs.

- 310 FITTED BASE UNITS & SINK BASE Note UNITS
- Standard: To BS 6222 -2 and -3, and BS EN 14749.
  - Manufacturer: Howdens.
    - Product reference: Technik gloss white
  - Structural performance: To BS 6222-2, test level H.
  - Dimensions: To BS EN 1116.
  - Surface finishes: To BS 6222-3.
  - Doors and drawer fronts:
    - Material: 18mm high density fine finish particle board.
    - Finish and colour: Gloss/ Standard range.
    - Edges: to match face colour.
  - Side panels, plinths and shelves:
    - Material: 18mm high density fine finish particle board.
    - Finish and colour: Gloss / Standard range
    - Edges: to match face colour.
  - Accessories: Clip on continuous plinth to floor base units.  
Matching end panels to exposed faces.  
Handles to be Brushed steel effect thick strap D handle
    - Allow for end panels etc for creating spaces for undercounter fridge
    - All doors to have locks fitted as per N10/170.
- 320 FITTED WALL UNITS
- Standard: To BS 6222 -2 and -3, and BS EN 14749.
  - Manufacturer: Howdens.
    - Product reference: Technik Gloss White
  - Structural performance: To BS 6222-2, test level H.
  - Dimensions: To BS EN 1116.
  - Surface finishes: To BS 6222-3.
  - Doors and drawer fronts:
    - Material: 18mm high density fine finish particle board.
    - Finish and colour: Gloss/ Standard range
    - Edges: to match face colour.
  - Side panels and shelves:
    - Material: 18mm high density fine finish particle board.
    - Finish and colour: Gloss / Standard range
    - Edges: to match face colour.
  - Accessories: Matching end panels to exposed faces.  
Handles to be Brushed steel effect thick strap D handle
    - All doors to have locks fitted as per N10/170

330 FITTED BASE DRAWER UNITS

- Standard: To BS 6222 -2 and -3, and BS EN 14749.
- Manufacturer: Howdens.
  - Product reference: Technik gloss white
- Structural performance: To BS 6222-2, test level H.
- Dimensions: To BS EN 1116.
- Surface finishes: To BS 6222-3.
- Doors and drawer fronts:
  - Material: 18mm high density fine finish particle board.
  - Finish and colour: Gloss/ Standard range.
  - Edges: to match face colour.
- Side panels, plinths and shelves:
  - Material: 18mm high density fine finish particle board.
  - Finish and colour: Gloss / Standard range
  - Edges: to match face colour.
- Accessories: Clip on continuous plinth to floor base units.  
Matching end panels to exposed faces.  
Handles to be Brushed steel effect thick strap D handle
  - Allow for end panels etc for creating spaces for undercounter fridge

340 WORKTOPS

- Standard: To BS 6222-3, Type 2
- Manufacturer: Hi-Macs Solid grade or similar approved
  - Product reference: Charcoal colour Hercules (TBC)
- Material:
- Exposed edges: to match face colour. (Joints to have seamless welds)
- Support: new base units.

350 SINKS, TAPS, TRAPS AND WASTES

- Sinks:
  - Standard: To BS EN 13310.
  - Manufacturer: Howdens.  
Product reference: Lamona Belmont 1.5 bowl sink
  - Configuration: single bowl sink
  - Overall size: 510 x 460 x 200mm
  - Material: stainless steel.  
Colour and finish: polished stainless steel.
- Tap/ chainstay/ overflow holes:.
- Taps: single lever mixer tap.
  - Manufacturer: Howdens  
Product reference: Lamona chrome Enza Monobloc tap
  - Operation: Single lever.
  - Material: chrome plated brass.
- Wastes:
  - Standard: To BS EN 274-1, -2 and -3.
  - Manufacturer: Howdens.
  - Size: 90mm strainer waste.
  - Material: stainless steel.
- Traps:
  - Standard: To BS EN 274-1, -2 and -3.
  - Manufacturer: to contractor's choice.
  - Size: 75mm deep seal bottle trap.
  - Material: plastics.
  - Depth of seal (minimum): 75 mm

360 APPLIANCES

- Item: Freestanding electric cooker (4No. in food tech room)
- Manufacturer: Hotpoint
  - Product reference: Ultima HU1612P 60cm Electric Cooker with Induction Hob
- Colour and finish: White
- Service connections: A+ Rated

370 APPLIANCES

- Item: Under counter fridge (2No. in food tech room)
- Manufacturer: Hoover
  - Product reference: HVTL542WHK
- Colour and finish: White
- Service connections: A+ Rated

390 SEALANT

- Standard: Silicone based to BS 5889, Type B with fungicide.
- Type: silicon.
  - Manufacturer: Adshead Ratcliffe.
  - Product reference: Arbokol 1025.
- Colour: Clear

**EXECUTION**

610 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS

- Control and monitoring:
  - Method statement: Submit.

620 INSTALLATION GENERALLY

- Fixings and adhesives: As section Z20.

630 INSTALLING UNITS AND WORKTOPS

- General: Well fitting, stable and secure.

650 INSTALLING SINKS, TAPS AND WASTES

- Water supply: To BS EN 806-2 and -4.
- Taps:
  - Fixing: Secure, watertight seal with the appliance.
  - Positioning: Hot tap to left of cold tap as viewed by the user of the appliance.
- Wastes:
  - Bedding: Waterproof jointing compound.
  - Fixing: With resilient washer between appliance and backnut.

660 SEALANT BEDDING AND POINTING

- Application: As section Z22.

670 INSTALLING TRIMS AND MOULDINGS

- Lengths: Un-jointed between angles or ends of runs.
- Angle joints: Mitred.

**COMPLETION**

910 GENERAL

- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

920 APPLIANCE COMMISSIONING

- Appliance operation, functions and controls: Verify.
- Documentation: Submit guarantees, instruction manuals, etc.



## **N12 COMMERCIAL CATERING FITTINGS, FURNITURE AND EQUIPMENT**

To be read with Preliminaries and General Conditions and Quote ref 5476.02 appended immediately after this section.

### **PRODUCTS**

Manufacturer and product reference for benchmark pricing purposes only.  
Contract administrator will consider equal and alternative specs.

### **EXECUTION**

#### **610 MOISTURE CONTENT OF WOOD AND WOOD BASED BOARDS**

- Control and monitoring:
  - Method statement: Submit.

#### **620 INSTALLATION GENERALLY**

- Fixing and fasteners: As section Z20.
- Services: \_\_\_\_\_ .

#### **630 INSTALLING EQUIPMENT, UNITS, APPLIANCES AND WORKTOPS**

- General: Correctly positioned and aligned, stable and secure.

#### **640 SERVICES TO EQUIPMENT, UNITS AND APPLIANCES**

- Connections: Provide to electric, gas, and hot and cold water services.

#### **650 INSTALLING SINKS, TAPS, TRAPS AND WASTES**

- Water supply: To BS EN 806-1, -2, -3, -4 and -5 and BS 8558.
- Taps:
  - Fixing: Secure, watertight seal with the appliance.
  - Positioning: Hot tap to left of cold tap as viewed by the user of the appliance.
- Wastes:
  - Bedding: Waterproof jointing compound.
  - Fixing: With resilient washer between appliance and backnut.

#### **660 SEALANT BEDDING AND POINTING**

- Application: As section Z22.
- Bedding: \_\_\_\_\_ .
- Pointing: \_\_\_\_\_ .

#### **670 TRIMS**

- Lengths: Unjointed between angles or ends of runs.
- Angle joints: Mitred.

### **COMPLETION**

#### **910 GENERAL**

- Doors and drawers: Accurately aligned, not binding. Adjusted to ensure smooth operation.
- Ironmongery: Checked, adjusted and lubricated to ensure correct functioning.

#### **920 EQUIPMENT, UNITS AND APPLIANCES**

- Test: Ensure that all functions and features work correctly.
- Documentation: Submit guarantees, instruction manuals, etc.

18/02/2019

## Quotation

<p><b>To:</b> City of Stoke-on-Trent Mark Brassington Floor 3 Civic Centre Glebe Street Stoke on Trent, Staffordshire ST4 1HH Contact: 01782 23 2358</p>	<p><b>From:</b> Garners Food Service Equipment Neil Garlick 28 - 32 Hall Street Sherwood Nottingham, NG5 4AS Tel: 0115 960 9690 Contact: 0115 960 9690</p>
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<p><b>Project:</b> Sandford Hill Primary School</p>	<p><b>Job Reference Number:</b> 5476.02 First Issue</p>
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Item	Qty	Description	Sell	Sell Total
<b>QUOTATION BASED ON THE FOLLOWING INFORMATION (BY GFSE):</b>				
<b>- 5476.02 - SANDFORD HILL PRIMARY SCHOOL - REV. B - SERVICES</b>				
1.01	1 ea	<b>WALL BENCH, STATIC</b> Stainless steel wall bench - 1200mm x 600mm x 900mm with upstand to rear and one side and base shelf under.	£208.00	£208.00
			<b>ITEM TOTAL:</b>	<b>£208.00</b>
1.02	1 ea	<b>WALL SHELF, SINGLE</b> Stainless steel single wall shelf - 1200mm x 300mm complete with wall brackets.	£60.00	£60.00
			<b>ITEM TOTAL:</b>	<b>£60.00</b>
1.03	1 ea	<b>SHELVING UNIT, WIRE</b> EZ Store + Wire Shelving System, 4-tier, 1800mm W x 400mm D x 1800mm H, 275kg weight load capacity per shelf, bright chrome finish	£103.66	£103.66
			<b>ITEM TOTAL:</b>	<b>£103.66</b>
1.04	1 ea	<b>SHELVING UNIT, WIRE</b> EZ Store + Wire Shelving System, 4-tier, 1500mm W x 400mm D x 1800mm H, 275kg weight load capacity per shelf, bright chrome finish	£92.68	£92.68
			<b>ITEM TOTAL:</b>	<b>£92.68</b>

1.05	1 ea	<b>SHELVING UNIT, WIRE</b> EZ Store + Wire Shelving System, 4-tier, 1200mm W x 500mm D x 1800mm H, 300kg weight load capacity per shelf, bright chrome finish	£87.80	£87.80
			<b>ITEM TOTAL:</b>	<b>£87.80</b>
1.06	1 ea	<b>SHELVING UNIT, WIRE</b> EZ Store + Wire Shelving System, 4-tier, 1800mm W x 500mm D x 1800mm H, 275kg weight load capacity per shelf, bright chrome finish	£114.63	£114.63
			<b>ITEM TOTAL:</b>	<b>£114.63</b>
1.07	1 ea	<b>JANITORIAL SINK</b> BaSiX Janitorial Sink, overall 1150mm H x 500mm W x 600mm D, 430mm (max) x 280mm x 130mm hand-wash bowl, 400mm x 400mm x 200mm mop bowl, standard monoblock mixer nozzle, lift out mop strainer, removable service panel, waste fittings (excluding trap), adjustable feet, bracket, stainless steel construction	£447.99	£447.99
			<b>ITEM TOTAL:</b>	<b>£447.99</b>
1.08	1 ea	<b>WALL SHELF, SINGLE</b> Stainless steel single wall shelf - 800mm x 300mm complete with wall brackets.	£56.00	£56.00
			<b>ITEM TOTAL:</b>	<b>£56.00</b>
1.09	1 ea	<b>HOOK RAIL, WALL MOUNTED</b> Closet Organizer, wall mounted, 475mm x 83mm, with (2) 'S' hooks & (1) deep double hook, polypropylene	£39.02	£39.02
			<b>ITEM TOTAL:</b>	<b>£39.02</b>
2.01	1 ea	<b>HAND WASH BASIN</b> Stainless Steel Wall Mounted wash basin 400 x 350 x 105mm.	£73.82	£73.82
	1 ea	3" Lever, 1/2" basin tap pair, fitted with quarter-turn valves, chrome finish, WRAS		
			<b>ITEM TOTAL:</b>	<b>£73.82</b>
2.02	1 ea	<b>FLY KILLER / KILLING GRID</b> CZP Energy Pro 40 Stainless Steel, electric grid, Flying Insect Killer, 408mm W x 256mm H x 105mm D, 80-100 sqm range of action, (2) energy saving UV lamps with shatter-proof sheath, three-way fixing-hanging, wall-mounted, or stand-alone, UK moulded 3-pin plug, 220-240v/50/1-ph, 3 amps, plug and cord, CE, conforming to EU standards	£86.67	£86.67
			<b>ITEM TOTAL:</b>	<b>£86.67</b>

2.03	1 ea	<b>REFRIGERATOR, UPRIGHT (REACH-IN)</b>	£2,342.68	£2,342.68
		EP1440H EcoPro G2 Upright Refrigerator Cabinet, 1350 litre, two-section, (6) shelves, high grade 304 stainless steel doors & unit cover, stainless steel exterior, aluminium interior (+1°/+4°C), ergonomic full height door handle, smartphone style touch sensitive hidden-until-lit control panel, (5) lockable castors, top mounted self-contained refrigeration, MEPS D		
	1 ea	220/60/1, standard		
	1 ea	R290 energy efficient/environmentally friendly refrigerant (MEPS D)		
	1 ea	Self-contained condenser, standard		
		<b>ITEM TOTAL:</b>		<b>£2,342.68</b>
2.04	1 ea	<b>SINGLE SINK UNIT</b>	£535.38	£535.38
		Stainless steel single bowl sink unit with drainer to the right side - 1500mm x 730mm x 900mm with upstand to rear and base shelf under.		
	1 ea	3" Lever, 1/2" deck mixer, two hole, twin water feed, swivel spout, fitted with quarter-turn valves, chrome finish, WRAS		
		<b>ITEM TOTAL:</b>		<b>£535.38</b>
2.05	2 ea	<b>CHEST FREEZER</b>	£555.90	£1,111.80
		Chest Freezer, 447 litre/15.8 cu. ft. capacity, 1300mm W, (2) baskets included, -18° to -22°C adjustable temperature range, mains indicator light, manual defrost with drain, fitted handle with lock, stainless steel lid, bottom mounted compressor, static cooling, white exterior, hammered aluminium interior, feet, R600a, 141 watts		
		<b>ITEM TOTAL:</b>		<b>£1,111.80</b>
3.01a	1 ea	<b>COMBI OVEN, ELECTRIC, 1/1 GN</b>	£6,052.32	£6,052.32
		SelfCookingCentre, Electric, half-size, (6) 1/1 GN or (12) 1/2 GN capacity, (7) selfcooking controls, (3) combi-steamer modes, CareControl clean and care system, core temperature probe with 6-point measurement, retractable hand shower, USB interface, 11 kW, IPX5, CE, ENERGY STAR®		
	1 ea	400V 3 NAC standard		
	1 ea	Door hinged on right std.		
	1 ea	Combi-Duo Stacking Kit, type 61 (gas or electric)/61 (electric) & 61 (gas or electric)/101 (electric), 150 mm feet		
		<b>ITEM TOTAL:</b>		<b>£6,052.32</b>

3.01b	1 ea	<b>COMBI OVEN, ELECTRIC, 1/1 GN</b>	£7,504.41	£7,504.41
		SelfCookingCentre, Electric, half-size, (10) 1/1 GN or (20) 1/2 GN capacity, (7) selfcooking controls, (3) combi-steamer modes, CareControl clean and care system, core temperature probe with 6-point measurement, retractable hand shower, USB interface, 18.6 kW, IPX5, CE, ENERGY STAR®		
	1 ea	400V 3 NAC standard		
	1 ea	Door hinged on right std.		
			<b>ITEM TOTAL:</b>	<b>£7,504.41</b>
3.02	1 ea	<b>WALL BENCH, STATIC</b>	£166.67	£166.67
		Stainless steel wall bench - 300mm x 785mm x 900mm with upstand to rear and base shelf under.		
			<b>ITEM TOTAL:</b>	<b>£166.67</b>
3.03	1 ea	<b>FRYER, FLOOR MODEL, ELECTRIC, SINGLE WELL</b>	£2,824.41	£2,824.41
		Dominator Plus Medium Duty Fryer, electric, floor model, 600mm, 40 litre capacity, thermostatic control, includes: twin basket, fish grid & pan cover, mild steel pan, stainless steel exterior, legs, 18.25 kW, 31.7 amps, CE		
	1 ea	400v/50/3-ph, standard		
	1 ea	150mm legs, standard		
			<b>ITEM TOTAL:</b>	<b>£2,824.41</b>
3.04	1 ea	<b>WALL BENCH, STATIC</b>	£166.67	£166.67
		Stainless steel wall bench - 300mm x 785mm x 900mm with upstand to rear and base shelf under.		
			<b>ITEM TOTAL:</b>	<b>£166.67</b>
3.05	1 ea	<b>MEDIUM DUTY RANGE, 900MM, 3 HOT PLATES</b>	£3,688.24	£3,688.24
		Dominator Plus Medium Duty Range, electric, 900mm, (3) cast iron hotplates, 2/1 GN standard oven, (2) shelves, removable drip tray, (2) side hinged doors, enamel oven interior, stainless steel exterior, 14.7 kW, 22.0 amps, CE		
	1 ea	400v/50/3-ph		
	1 ea	150mm legs, standard		
			<b>ITEM TOTAL:</b>	<b>£3,688.24</b>
3.06	1 ea	<b>CENTRE BENCH, STATIC</b>	£252.00	£252.00
		Stainless steel centre bench - 1800mm x 700mm x 900mm with void under.		
			<b>ITEM TOTAL:</b>	<b>£252.00</b>

3.07	1 ea	<b>REFRIGERATOR, UNDERCOUNTER</b>	£915.85	£915.85
		HR150 Undercounter Refrigerator, reach-in, one-section, 605 mm wide, 150 litre, (2) shelves, stainless steel door, stainless steel exterior, aluminium interior, door locks, (+3°/+5° C) ergonomic full length door handle, LED temperature display, roller castors to rear and leveling bolts to front, rear mounted self-contained refrigeration, MEPS A		
	1 ea	230/50/1 voltage option, standard		
	1 ea	R290 energy efficient/environmentally friendly refrigerant (MEPS A)		
			<b>ITEM TOTAL:</b>	<b>£915.85</b>
3.08	1 ea	<b>REFRIGERATOR, UNDERCOUNTER</b>	£915.85	£915.85
		HR150 Undercounter Refrigerator, reach-in, one-section, 605 mm wide, 150 litre, (2) shelves, stainless steel door, stainless steel exterior, aluminium interior, door locks, (+3°/+5° C) ergonomic full length door handle, LED temperature display, roller castors to rear and leveling bolts to front, rear mounted self-contained refrigeration, MEPS A		
	1 ea	230/50/1 voltage option, standard		
	1 ea	R290 energy efficient/environmentally friendly refrigerant (MEPS A)		
			<b>ITEM TOTAL:</b>	<b>£915.85</b>
3.09	1 ea	<b>WALL BENCH, STATIC</b>	£237.33	£237.33
		Stainless steel wall bench - 900mm x 600mm x 900mm with upstand to rear, 1no. drawer and base shelf under.		
			<b>ITEM TOTAL:</b>	<b>£237.33</b>
3.10	1 ea	<b>SINGLE SINK UNIT</b>	£483.38	£483.38
		Stainless steel single bowl sink unit with drainer to the right side - 1200mm x 600mm x 900mm with upstand to rear and base shelf under.		
	1 ea	3" Lever, 1/2" deck mixer, two hole, twin water feed, swivel spout, fitted with quarter-turn valves, chrome finish, WRAS		
			<b>ITEM TOTAL:</b>	<b>£483.38</b>

3.11	1 ea	<b>FOOD MIXER</b> Mixer, planetary, 20 litre (21 quart), bench mounted, heavy duty, 3 speed gear box, no-volt release thermal overload protection, fully interlocked bowl guard and bowl lift, emergency stop button, includes stainless steel bowl, whisk, dough hook, beater, and #12 attachment hub, non-slip rubber feet, 3/4 hp, 370 watts, 220v/50/1-ph, 6 amps, cord, 3-pin plug, CE	£1,907.18	£1,907.18
	1 ea	Standard warranty, 3 year warranty (1 year parts & labour, 2nd and 3rd years parts only) & full after sales service		
	1 ea	NOTE: 3 year warranty on mixer, 6 month warranty on attachments, standard		
	1 ea	Note: Carriage is charged on order for all spare parts, irrelevant of their value. (Minimum £10/Maximum £25)		
		<b>ITEM TOTAL:</b>		<b>£1,907.18</b>
3.12	1 ea	<b>WALL BENCH, STATIC</b> Stainless steel wall bench - 900mm x 600mm x 900mm with upstand to rear, 600mm drop down section for mixer and base shelf under.	£293.33	£293.33
		<b>ITEM TOTAL:</b>		<b>£293.33</b>
3.13	1 ea	<b>SERVICE DISTRIBUTION UNIT</b> Stainless steel service distribution unit - 3150mm x 250mm with 2no. risers, 1no. back box to spline for mixer and 2no. back boxes to riser for under counter refrigerators. All services and isolators by others	£2,034.69	£2,034.69
	3 ea	Single socket back box welded into panel.		
		<b>ITEM TOTAL:</b>		<b>£2,034.69</b>

3.14	1 ea	<b>VENTILATION CANOPY, ISLAND TYPE</b> Stainless steel island type extract / air input canopy - 3900mm x 1900mm. Made from 304 grade stainless steel with a full length filter housing and baffle type grease filters. To include grease collection trays along the underside of the filter housing and fully insulated air input chamber to front face of canopy. Spigot connection only.	£16,372.95	£16,372.95
	4 ea	LED light fittings each with a tail of 1.50m flexible cable to be connected to mains by others.		
	2 ea	IP 65 emergency down light with 3 hour battery backup.		
	1 ea	5.00m extract duct, 3 phase axial fan, standard speed controller (supply only to be wired by others) and a standard cowl.		
	2 ea	1D extraction silencer to reduce the breakout noise from the fan on either exhaust or operator side. Noise reduction from 7 - 10 Dba.		
	1 ea	5.00m air input duct, 3 phase axial fan, standard speed controller (supply only to be wired by others), pleated filter assembly complete with service door and a standard cowl.		
	2 ea	1D input silencer to reduce the breakout noise from the fan on either exhaust or operator side. Noise reduction from 7 - 10 Dba.		
	1 ea	Electric heater battery complete with integral Thyristor controls, duct mounted temperature and air flow probe, auto and manual reset for continuous safe operation.	£2,062.50	<Optional>
		Please note this cost does not include any waterproof cover for external use. Price does not include electrical connection. Alternative cost required for systems with air flow rates above 2.0m <sup>3</sup> /s.		
	1 ea	Final connection wiring only to any fans or controllers supplied. All field wiring to be installed by others to a point at which the controls and electrical items within our install can be directly connected. No field wiring included within this price and no electrical materials.		
	1 ea	INSTALLATION - Specialist installation of ventilation equipment during normal working hours (Mon - Fri 9:00AM - 5:00PM) and in a continuous manner.		
			<b>ITEM TOTAL:</b>	<b>£16,372.95</b>

3.15	1 ea	<b>PAN / GASTRONORM TROLLEY</b> Premier Racking Trolley, 20-tier, 450mm W x 610mm D x 1700mm H, 65 pitch, profile 325mm, fits GN 1/1 pans, 20kg max load per level, 200kg max load per unit, 304 stainless steel, (4) castors (2 with brakes), bumpers	£280.49	£280.49
			<b>ITEM TOTAL:</b>	<b>£280.49</b>



3.16	1 ea	<b>CENTRE BENCH, MOBILE</b>	£317.33	£317.33
		Stainless steel mobile centre bench - 1200mm x 600mm x 900mm with 2no. drawers and base shelf under.		
			<b>ITEM TOTAL:</b>	<b>£317.33</b>
4.01	1 ea	<b>HAND WASH BASIN</b>	£73.82	£73.82
		Stainless Steel Wall Mounted wash basin 400 x 350 x 105mm.		
	1 ea	3" Lever, 1/2" basin tap pair, fitted with quarter-turn valves, chrome finish, WRAS		
			<b>ITEM TOTAL:</b>	<b>£73.82</b>
4.02	1 ea	<b>FLY KILLER / KILLING GRID</b>	£86.67	£86.67
		CZP Energy Pro 40 Stainless Steel, electric grid, Flying Insect Killer, 408mm W x 256mm H x 105mm D, 80-100 sqm range of action, (2) energy saving UV lamps with shatter-proof sheath, three-way fixing-hanging, wall-mounted, or stand-alone, UK moulded 3-pin plug, 220-240v/50/1-ph, 3 amps, plug and cord, CE, conforming to EU standards		
			<b>ITEM TOTAL:</b>	<b>£86.67</b>
4.03	1 ea	<b>DRAIN DOSING SYSTEM</b>	£564.75	£564.75
		GreasePaK Drain Maintenance System, BATTERY operated compact dosing module, requires GP-MSGD5 Bio-Enzymatic Dosing Fluid, 'fluid empty' audible alarm, key-lockable, CE, BBA		
	1 ea	Bio-Enzymatic Fluid master box, BBA, for GreasePaK Drain Maintenance System (packed 3 x 5 L boxes per master box)		
			<b>ITEM TOTAL:</b>	<b>£564.75</b>
4.04	1 ea	<b>PRE-RINSE FAUCET ASSEMBLY, WITH ADD ON FAUCET</b>	£226.53	£226.53
		AquaJet Pre-Rinse Spray, 1200mm H, 300mm L wall brace, tap hole 2x25mm, (2) pedestal, (2) water feed, standard lever controls, standard rose head gun, deck mounted + plus 12-in bowl-filling faucet, WRAS		
	1 ea	Restraining Device to prevent spray arm from being overstretched		
	1 ea	AquaJet Wall Bracket, 300mm length, 17.15 dia.		
			<b>ITEM TOTAL:</b>	<b>£226.53</b>
4.05	1 ea	<b>DISHWASH TABLE, BESPOKE</b>	£560.00	£560.00
		Dishwasher inlet table - 1600mm x 740mm x height to suit hood type dishwasher with inset sink with localised rear splash guard.		
			<b>ITEM TOTAL:</b>	<b>£560.00</b>

4.06	1 ea	<b>ECOMAX PLUS</b> A powerful hood type dishwasher (500 x 500mm rack)with a 4 sided hood, Electronic controls, Integral softener, automatic drain down and self flushing cycle.440mm hood opening height allows double racking of crockery. Powerful 0.73kWpump with separate upper and lower wash and rinse arms, integral detergent and rinse aid pumps, Class “A” air gap, rinse booster pump, choice of cycles, 60 or 90 seconds. Two stage strainer with interlock. Up to 60 racks per hour Digital rinse and wash temperature display. Supplied as standard with 1 x Plate rack, 1 x Open rack, 1 x 4 Compartment cutlery basket Max plate clearance height 440mm,7kW/3 x 16A 400/50/3 switchable to 4.9kW/25A 230/50/1.	£4,341.46	£4,341.46
			<b>ITEM TOTAL:</b>	<b>£4,341.46</b>
4.07	1 ea	<b>DISHWASHER TABLE, BESPOKE</b> Dishwasher outlet table - 1200mm x 740mm x height to suit hood type dishwasher with 2no. banks of basket runners under.	£437.33	£437.33
			<b>ITEM TOTAL:</b>	<b>£437.33</b>
4.08	1 ea	<b>SHELVING UNIT, WIRE</b> EZ Store + Wire Shelving System, 4-tier, 1800mm W x 500mm D x 1800mm H, 275kg weight load capacity per shelf, grey nylon coated shelves & poles	£130.49	£130.49
			<b>ITEM TOTAL:</b>	<b>£130.49</b>
4.09	1 ea	<b>TROLLEY, UTILITY</b> Premier Catering Serving Trolley, 800mm W x 500mm D x 960mm H, 3-tier, 280 pitch, 50kg max load per level, soundproofed/dished shelves, stainless steel, (4) castors (2 with brakes), bumpers	£195.12	£195.12
			<b>ITEM TOTAL:</b>	<b>£195.12</b>
4.10		<b>BY OTHERS</b> Existing freestanding food waste disposer - by others.		
5.01		<b>BY OTHERS</b> Full height fire shutter - by others.		
5.02	1 ea	<b>SERVING COUNTER, UTILITY</b> Versicarte Ambient Cupboard, 1160 mm, enclosed base, removable internal grid shelves and sliding doors, lockable castors	£765.98	£765.98
	1 ea	Merlin grey, standard (colour tbc)		
	1 ea	Tray Slide, triple tube drop down, size 3		
			<b>ITEM TOTAL:</b>	<b>£765.98</b>

5.03	1 ea	<b>SERVING COUNTER, HOT FOOD, ELECTRIC</b>	£2,422.69	£2,422.69
		Versicarte Plus Mobile Serving Counter, hot food, electric, 1815mm W x 680mm D x 900mm H, hot top with (5) glass thermo panels (5 GN size), up to 110° C surface temperature, thermostatic control, removable sliding doors & internal grid shelves, fascia panels, heated base, lockable castors, 2.0 kW		
	1 ea	Merlin grey, standard (colour tbc)		
	1 ea	Tray Slide, triple tube drop down, size 5		
	1 ea	Quartz lamp illuminated and heated gantry with interchangeable curved screen or shelf, size 5		
	1 ea	(1) Set of Gantry End Glass		
			<b>ITEM TOTAL:</b>	<b>£2,422.69</b>
DEMO	1 ea	<b>DEMONSTRATION</b>	£200.00	£200.00
		Basic demonstration of equipment supplied		
			<b>ITEM TOTAL:</b>	<b>£200.00</b>
INST	1 ea	<b>INSTALLATION</b>	£3,600.00	£3,600.00
		INSTALLATION - To install the above equipment, excluding any existing items unless otherwise stated, on a clear site during normal working hours in one continuous visit to water, waste, gas and electrical services provided and terminating within 1m of individual equipment connection points by others. Water and waste connections will be made in standard copper and white solvent weld HTUPVC unless otherwise specified, all services are to be terminated in - via suitable isolators, outlets, valves, stubs etc. Price excludes the final electrical connection to any extract or input fans, canopy lights, speed regulators, fire suppression systems - interlocks or earth bonding which are to be carried out by others. All extract canopies are to be supplied with spigot terminations only unless otherwise specified with final ductwork connections being made by others after canopy installation. Price includes the fitting of all quick disconnect gas hoses, water hoses and the provision of detailed services and manufacturing approval drawings. In line with general E.H.O requirements a nominal 50mm cleaning gap will be allowed to rear of and between appliances. No allowance has been made for P.A.T. testing or certification of any electrical installations which if required can be quoted upon request.		
			<b>ITEM TOTAL:</b>	<b>£3,600.00</b>
			<b>Total</b>	<b>£63,378.07</b>

All prices are subject to the addition of VAT at the rate prevailing at point of dispatch  
This quotation in its entirety is subject to Garners standard terms and conditions  
unless specifically agreed to the contrary. Further BREAAAM options are available on request.

*See our Terms and Conditions at [www.garnerfse.co.uk/terms](http://www.garnerfse.co.uk/terms)  
For details on how we retain, share and process data, see our privacy policy at [www.garnerfse.co.uk/privacy](http://www.garnerfse.co.uk/privacy)*

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## 015141

### Grease Separators, 1.2m - 1.8m Diameter Units. 2,000 – 11,000Litres Installation & Operation Guidelines

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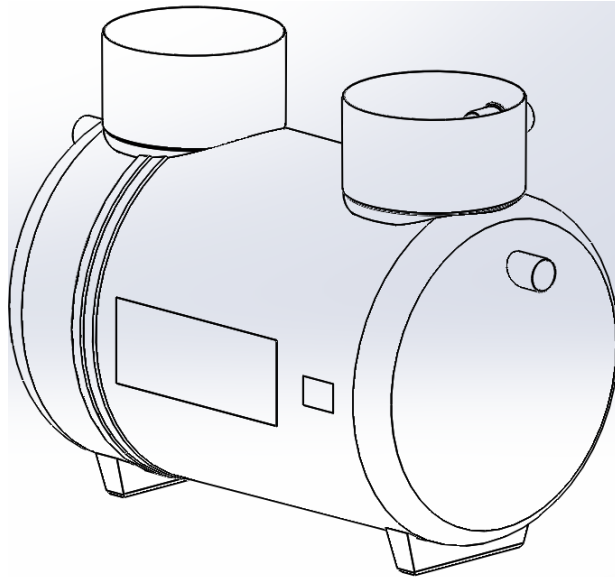


#### Kingspan Environmental Service Contact Numbers:

GB: 0844 846 0500

NI: 028 3025 4077

IRL: 048 3025 4077



#### Attached Documents

<b>DS1269P</b>	<b>Ø1.2 NSG04 Grease Separator 2000L Sales Drawing</b>
<b>DS1270P</b>	<b>Ø1.2 NSG06 Grease Separator 3000L Sales Drawing</b>
<b>DS1271P</b>	<b>Ø1.2 NSG09 Grease Separator 4000L Sales Drawing</b>
<b>DS1327P</b>	<b>Ø1.4 NSG14 Grease Separator 6000L Sales Drawing</b>
<b>DS1272P</b>	<b>Ø1.8 NSG18 Grease Separator 8000L Sales Drawing</b>
<b>DS1273P</b>	<b>Ø1.8 NSG24 Grease Separator 11000L Sales Drawing</b>

<b>Issue</b>	<b>Description</b>	<b>Date</b>
07	CC1381 – Grease Separator NSG14 added	June 2017

## **HEALTH & SAFETY**

**These warnings are provided in the interest of safety. You must read them carefully before installing or using the equipment.**

It is important that this document is retained with the equipment for future reference. Should the equipment be transferred to a new owner, always ensure that all relevant documents are supplied in order that the new owner can be acquainted with the functioning of the equipment and the relevant warnings.

Installation should only be carried out by a suitably experienced contractor, following these guidelines.

We recommend the use of a dust mask and gloves when cutting GRP components.

Electrical work should be carried out by a qualified electrician.

Contaminated surface water can contain substances harmful to human health. Any person carrying out maintenance on the equipment should wear suitable protective clothing, including gloves. Good hygiene practice should also be observed.

Access covers should be selected with reference to the location of the unit and traffic loads to be accommodated. These are not (normally) part of the Separator supply.

When covers are removed precautions must be taken against personnel falling into the unit.

Should you wish to inspect the operation of the equipment, please observe all necessary precautions, including those listed below, which apply to maintenance procedures.

Ensure that you are familiar with the safe working areas and accesses. Ensure that the working area is adequately lit.

Take care to maintain correct posture, particularly when lifting. Use appropriate lifting equipment when necessary. Keep proper footing and balance at all times. Avoid any sharp edges.

## **MAINTENANCE**

The correct ongoing maintenance is essential for the proper operation of the equipment.

The removal of sediment and retained oil/grease should be carried out by a contractor holding the relevant permits to transport and dispose of such waste. The contractor must refer to the guidelines in this document.

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## 1 Introduction

- 1.1.1 These Guidelines represent Best Practice for the installation of our grease separator units. Many years of specialist experience has led to the successful installation of thousands of separator units. It must be noted, however, that these Guidelines are necessarily of a general nature. It is the responsibility of others to verify that they are appropriate for the specific ground conditions and in-service loads of each installation. Similarly, any information or advice given by our employees or agents regarding the design of an installation must be verified by a qualified specialist (e.g. Civil engineering consultant).
- 1.1.2 Grease separators are designed for use on the dedicated outlets of communal kitchens connected to individual package wastewater treatment plants or septic tanks. Examples of applications include public houses, restaurants, hotels, nursing homes, schools and activity centres. The grease separator is designed to retain most of the fats and greases discharged from a catering environment. Fats, oils and greases must not be allowed to be discharged into a package treatment unit as they affect the biological process. They contribute towards extra organic load; they can block the media and affect the liquid distribution systems. Their presence can affect the development of the active bacteria in the treatment plant and as a result the treatment plant may not operate correctly.
- 1.1.3 The units are sized based on the facilities advised number of meals per day. The wastes discharged into the unit are expected to come from pot washing sinks, dishwashers and other kitchen wash sinks. The addition of excess emulsifying agents to break up the fats can adversely affects the units' performance. The temperature of the wastewater also affects performance.
- 1.1.4 Waste disposal units must not be connected to the unit. Waste fats from fryers must not be disposed of into the unit. Mineral oils must not be discharged into the unit. Organic wastes from toilets and staff wash rooms must not be connected. Surface water drains must not be connected.
- 1.1.5 The positioning of the separator must be considered. The installation should be arranged to accept and discharge wastes by gravity. If the waste water is mainly dishwasher waste, the separator should be placed in a location which allows the waste water to cool so as to allow the fats to separate. (This can be difficult to predict as it depends on the nature of the fat and the amount of emulsifying agents used). Dishwasher flow rates and their usage should be advised in order to select a separator volume. Good kitchen practices must be employed. Before placing dishes in the washers, plates must be scraped well, or rinsed to avoid excess food being transferred into the system.
- 1.1.6 Venting locations must be selected carefully considering the use of the building and its surrounds, the location of the high level vents and drain access points.

### 1.2 Handling & Storage

- 1.2.1 Care must be taken to ensure that units are not damaged during delivery and handling on site. Please take care and place unit so that it cannot fall and become damaged.
- 1.2.2 The design requirements of our products will frequently mean that the centre of gravity of the unit is "offset". Care must therefore be taken to ensure that the unit is stable when lifting. Rainwater may also collect inside units, particularly if they have been stored on site prior to installation, adding weight and increasing instability. Check units before lifting and pump out any excess water.
- 1.2.3 When lifting units, use webbing slings of a suitable specification. Do not use chains.
- 1.2.4 A suitable spreader bar should be used to ensure that units are stable and that loads are evenly distributed during lifting. When lifting separators, a spreader bar should be used where the slings would otherwise be at an angle > 30 degrees to the vertical.
- 1.2.5 Lifting equipment should be selected by taking into account the unit weight, length and the distance of lift required on site.
- 1.2.6 We accept no responsibility for the selection of lifting equipment.
- 1.2.7 Whenever units are stored or moved on site, ensure that the storage location is free of rock, debris and any sharp objects, which may damage the unit. The units must be placed on ground, which is flat, and level and the unit orientated onto its side with even support. Do not roll separators.



### 1.3 Site Planning

The following points should be considered before installation of the equipment:

- 1.3.1 The effluent discharge will require further treatment either by a package or municipal treatment plant and its final discharge will usually require the consent of the relevant Environmental Regulator.
- 1.3.2 The installation should have Planning and Building Control approval.
- 1.3.3 The kitchen /catering waste must be cool enough to allow the fats and oils to separate.
- 1.3.4 The waste must not contain any added organic content, e.g. any waste from toilets or waste disposal units etc. (see introduction above).
- 1.3.5 The location of the unit is very important.
- 1.3.6 The drains laid to the unit should have a fall of 1:50 (2%) to prevent accumulation of grease.
- 1.3.7 **Venting.** Be aware that grease separators may contain and discharge strong wastes which can become anaerobic and as a result their contents and discharge can produce foul odours. The odours produced tend to be hydrogen sulphides, (rotten eggs smell) or methyl mercaptans (rotting cabbage smell); these gases are heavy and when vented, may be spun down from a high level vent, or wafted out and around by a low level vent.
- 1.3.8 **It is recommended that pipelines connected to grease separators shall be adequately vented.** The discharge pipe to the separator should be provided with a stack vent. Branch ventilating pipes should be connected to all upstream pipes more than 5 m long. Where the nearest vent is further than 10m upstream of the grease separator, the supply pipes should be fitted with an additional vent pipe terminating as close as possible to the separator. High level vent positions should consider prevailing wind directions and possibly include a spinner to assist the draw and gas dispersion and dilution.
- 1.3.9 Considering the above, an alternative is to fit the grease separators and subsequent drain run with **well sealed covers**, venting only the drain above the separator at a high level point. The following drain run, including manhole covers should be sealed as far as the treatment plant. (Sewage treatment units must be vented at the head of the system, using high level vents sited to take account of prevailing wind, it may also be necessary to fit a vent local to the treatment unit). If the separator drain connection joins other drains, there is a possibility that odours will be released from the discharged liquid into this drain run.
- 1.3.10 If the grease separated effluent is to be sampled, before discharge into a treatment facility, consider installation of a sampling point downstream of the separator. There is no suitable facility to effectively sample inside the unit.
- 1.3.11 Uncontaminated run off such as roof water must be excluded from separators.
- 1.3.12 Ground conditions and water table level should be assessed. If the water table will be above the base of the units at any time of the year, adequate concrete backfill must be provided to avoid flotation. In poorly draining ground, consideration should also be given to the likelihood of flotation due to surface water collecting in the backfill, and an appropriate installation method devised to avoid this.
- 1.3.13 The separator must be installed at a level, which will allow connection to the incoming drain and a free discharge at the system outlet.
- 1.3.14 Do not install the unit deeper than necessary; ensure that you purchase extension shaft kits. The minimum invert depth of the unit is shown on the customer drawing. The maximum inlet invert is 2.0m.
- 1.3.15 Adequate access must be provided for routine maintenance. Vehicles should not be permitted within a distance equal to the depth of the unit, unless suitable structural protection is provided to the installation.
- 1.3.16 There must be at least 1 metre of clear, level ground all around the access covers to allow for routine maintenance.
- 1.3.17 It is essential that a mains water supply is accessible for routine cleansing and refilling after removal of waste material and liquid.
- 1.3.18 Installation should only be carried out by suitably qualified and experienced contractors in accordance with current Health and Safety Regulations.
- 1.3.19 This unit is designed to operate with gravity in and out flows. The unit is not designed to operate with a pumped influent.

## 2 Installation

### 2.1 Installation – General

- 2.1.1 When units are installed in unstable ground conditions where movement of the surrounding material and/or unit may occur, the connecting pipework should be designed to minimise the risk of damage from differential movement of the unit(s) and/or surrounding material.
- 2.1.2 For separators with burial depths greater than 1000mm from cover level to the top of the unit, specific site conditions should be taken into consideration and the backfill designed to bear any loads which may be applied during and after installation to prevent the tank being subjected to these loads.
- 2.1.3 The excavation must be deep enough to provide bedding and cover depth as determined by the type of surface pavement and loading. Asphalt and concrete pads should extend a minimum of 300mm horizontally beyond the unit in all directions.
- 2.1.4 In situations where the excavation will not maintain a vertical wall, it will be necessary to shore up the sidewalls of the excavation with suitable trench sheets and bracing systems to maintain a vertical wall from the bottom to the top of the excavation. DO NOT completely remove the shoring system until the backfilling is complete, but before the concrete fully hardens.
- 2.1.5 In areas where the water table is above the bottom of the excavation and/or the excavation is liable to flood, the excavation should be dewatered using suitable pumping equipment and this should continue until the installation is complete.
- 2.1.6 During installation care must be taken to ensure that the body of the unit is uniformly supported so that point loads through the unit are avoided.
- 2.1.7 The concrete Specification is not a site specific installation design.

<b>GENERAL CONCRETE SPECIFICATION IN ACCORDANCE WITH BS EN 206-1 ( BS 8500-1)</b>	
TYPE OF MIX	(DC) DESIGN
PERMITTED TYPE OF CEMENT	BS 12 (OPC): BS 12 (RHPC): BS 4027 (SRPC)
PERMITTED TYPE OF AGGREGATE (coarse & fine)	BS 882
NOMINAL MAXIMUM SIZE OF AGGREGATE	20 mm
GRADES: C25 /30 C25 /30 C16 /20	REINFORCED & ABOVE GROUND WITH HOLDING DOWN BOLTS REINFORCED (EG. FOR HIGH WATER TABLE) UNREINFORCED (NORMAL CONDITIONS)
MINIMUM CEMENT CONTENT	C30 270 - 280 Kg/M <sup>3</sup> C20 220 - 230 Kg/M <sup>3</sup>
SLUMP CLASS	S1 (25mm)
RATE OF SAMPLING	READY MIX CONCRETE SHOULD BE SUPPLIED COMPLETE WITH APPROPRIATE DELIVERY TICKET IN ACCORDANCE WITH BS EN 12350-1
NOTE: STANDARD MIXES SHOULD NOT BE USED WHERE SULPHATES OR OTHER AGGRESSIVE CHEMICALS EXIST IN GROUND WATER	

### 2.2 Separator Installation

- 2.2.1 Excavate a hole of sufficient length and width to accommodate the tank and a minimum 225mm concrete surround and to a depth, which allows for the burial depth of the unit plus concrete base slab and haunch.
- 2.2.2 Construct a suitable concrete base slab appropriate to site conditions. Ensure that the slab is flat and level.
- 2.2.3 When the concrete base slab has set enough to support the installed load, add a concrete haunch so as to provide even support under the unit and then lower the unit onto the haunch using suitable webbing slings and lifting equipment.

- 2.2.4 Pour no more than 300-mm depth of clean water into the unit, avoiding shock loads. DO NOT OVERFILL; the unit is not designed to hold water whilst unsupported.
- 2.2.5 Place concrete backfill to approximately 300mm depth under and to the sides of the tank ensuring good compaction to remove voids. DO NOT use vibrating rammers. Continue adding concrete backfill, simultaneously keeping the internal water level no more than 200 mm above the backfill level at all times, until the backfill is just below the underside of the outlet drain, giving sufficient room to connect the inlet and outlet pipework.
- 2.2.6 Connect inlet and outlet drains and vent pipes when safe access to the backfill can be gained.

### **2.3 Pipework Connections**

- 2.3.1 In all cases, ensure that the outlet pipework level is maintained for correct operation. The fall across the unit must be maintained.
- 2.3.2 Small units are generally fitted with PVCu pipe spigots at the inlet and pipe at the outlet.
- 2.3.3 Connect using the same size PVCu socket.
- 2.3.4 The connecting pipe work should be pushed into the socket. Ensure that the seal is secure and watertight before backfilling the pipe.
- 2.3.5 Continue backfilling with concrete over the tank body to the required level. Build up a shell of concrete, minimum 225mm thick, around the access shaft(s). Temporarily strut the access shaft to avoid distortion.
- 2.3.6 It is advisable to seal the joints on the extension shafts (particularly on sites with high ground water) with proprietary sealant or by GRP lamination. Temporarily strut the extension neck(s) to avoid distortion during back filling. Where more than one neck section is required to suit a deep invert, consider back-filling section by section. If the extension neck is too long, it can be trimmed using a fine-toothed saw.
- 2.3.7 The maximum recommended inlet invert is 2000mm (using extension sections).
- 2.3.8 Continue back-filling, ensuring minimum 225mm concrete thickness around the extension neck.
- 2.3.9 In traffic areas a suitable top slab must be constructed. The top slab should bear on a suitable foundation to prevent superimposed loads being transmitted to the unit and access shafts. Loads applied to covers and frames must bear on the top slab, not the access shaft.
- 2.3.10 The unit should be filled with clean water up to the invert level of the outlet pipe. Ensure the unit identification is placed/ marked inside the neck for future information. The unit is now ready for use.

## **3 Operation**

- 3.1.1 The unit is sized to treating a daily volume of meals. The unit will treat the entire flow. (If the load is greater than design then at times the flow will pass through the unit too quickly, the grease will not separate and the unit will discharge poorly separated liquid. The unit is not designed to be used for the disposal of macerated kitchen food waste, or for the disposal of oil when emptying and cleaning fryers. (These products must be taken off site and NOT be discharged into the separator).
- 3.1.2 The chamber will accumulate fat and any solids entering with the waste.
- 3.1.3 The liquid is discharged from a submerged pipe, from a point well below the accumulation of floating fat and above any settled particles.
- 3.1.4 From time to time, the unit must be completely emptied.

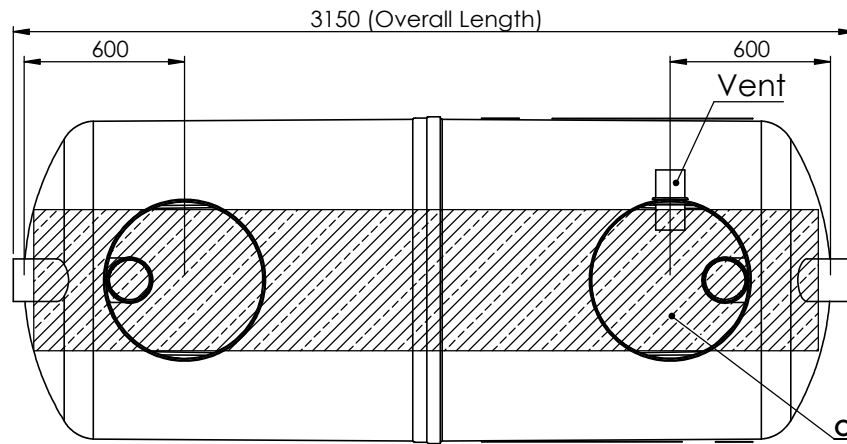
## 4 Maintenance

### 4.1 Waste Removal and Servicing

- 4.1.1 Every site is different, in respect to the amount and type of fat and solids generated by the usage and kitchen practices. We recommend following the initial installation, that regular inspections of the separator contents be made to check the rates and level of fat accumulation. The inspection and emptying programme can then be defined following the first 6 months site experience. Removal is expected to be required within this period.
- 4.1.2 We recommend leaving a maximum interval between removals of 6 months (more frequently if experience dictates). A log should be maintained detailing the depth of floating fat and grease detected, any volume removed and any solids or cleaning carried out. A specimen maintenance log is included in the appendices.
- 4.1.3 All the liquid solids and fats **must** be removed from the separator. No more than 200mm of fats should be allowed to accumulate
- 4.1.4 **Grease separator waste is usually considered to be domestic waste which maybe collected by a licensed waste disposal contractor. The waste producer should ensure that the Cleansing contractor is registered with the Environment Agency /Regulator and that the final disposal of the waste is to a licensed facility.**
- 4.1.5 Remove access covers and lower the desludging hose in to the separation chamber. Draw off the surface oil/fat.
- 4.1.6 To remove the settled solids, lower the desludge hose to the base of the tank and empty the contents of the chamber.
- 4.1.7 Replace the access covers.
- 4.1.8 Re-fill the separator with clean water up to the outlet level.



**TOTAL WORKING VOLUME = 2660L**



**OIL / GREASE SEPARATION AREA = 2.66m<sup>2</sup>**

Product	Size
NSG	06

Inlet Invert	
ww	Invert
05	0.5m Invert
10	1.0m Invert
15	1.5m Invert

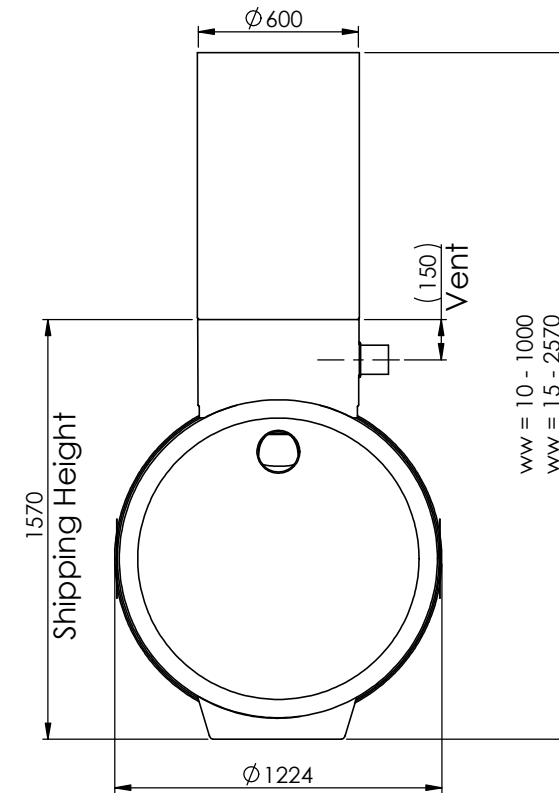
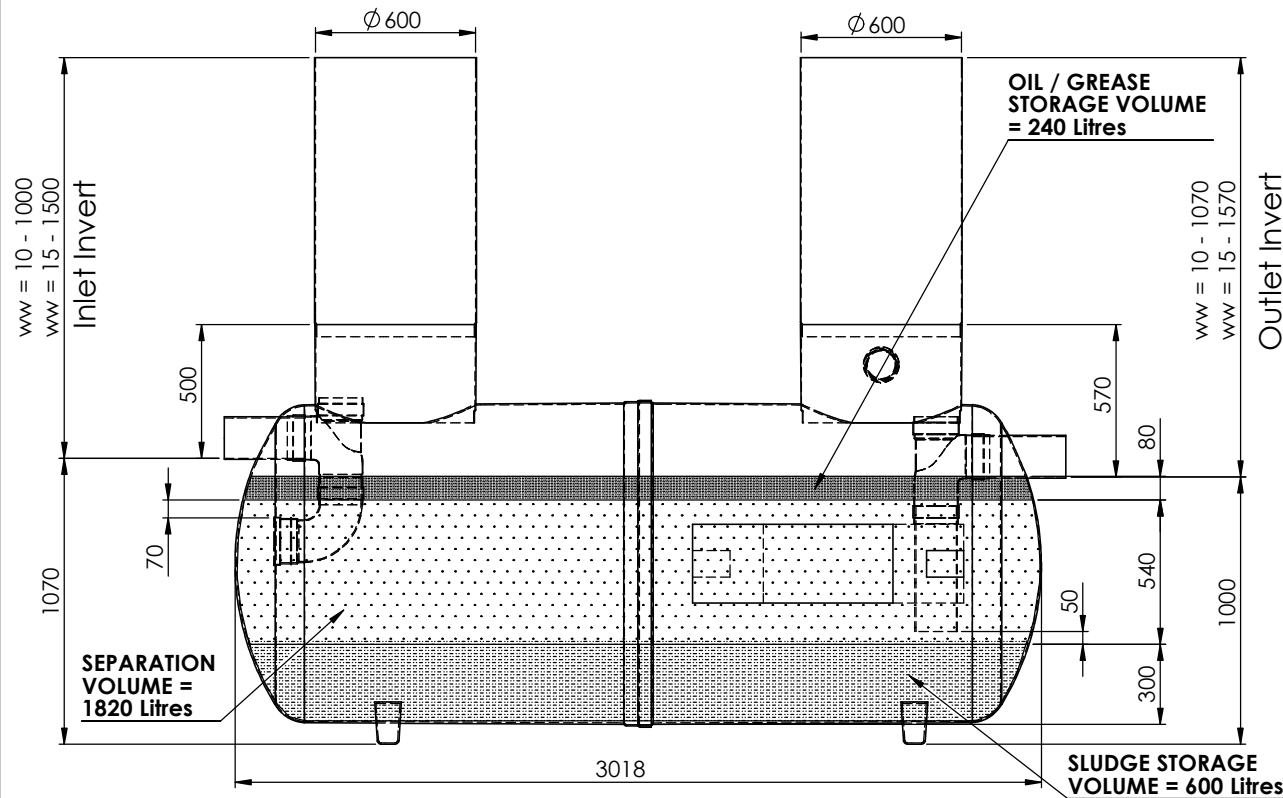
Pipework Orientation	
x	Orientation
A	Refer To TDS0033
B	
C	
D	
E	
F	
G	
H	
K	

Notes:-

1. Inlet Invert To Be Confirmed By Customer.
2. Pipework Orientation (A, B, C etc.) Dependant On Site Pipework Layout. To Be Specified At Order Stage.
3. Standard Minimum Pipework Size Is Ø160mm.
4. If Required, Extensions Will Be Supplied Loose To Be Fitted On-Site Using Silicon Sealant (Supplied By Others).
5. Tank Can Be Installed in Either Granular Or Concrete Backfill - Please See Manual For Details.

Standard Connections Size	
y	Connections (Ø)
C	Ø160

z	Branding
K	Klargester



Please Check with Environmental Treatment Systems Limited For The Latest Issue Of This Drawing				Material : Various	Tolerance (unless stated) :	Drawing : DS1270P	Page 1 of 1
Issue	Date	Drawn by	Approved by	Finish :	Thickness : n/a		
03	11/02/16	L.Steward		Weight : 130.61 Kg	Surface Area : m <sup>2</sup>	Ø1.2m NSG06 Grease Separator - 3000L	
02	04/09/15	L.Steward		Modelled By : Name			
All Dimensions In mm			Scale: Do Not Scale	 Third Angle Projection		Kingspan Environmental reserve the right to alter the details of this drawing without prior notice. This drawing is copyright and may not be reproduced or used without the written permission of Kingspan Environmental	
T:\Drawing Data\02 - Sales Drawings\DS\DS - 12\DS1270P							

## N13 SANITARY APPLIANCES AND FITTINGS

To be read with Preliminaries/ General Conditions

### 460 SCHEDULE PROVIDED BY LECICO BATHROOMS

#### MODULAR BLOCK 'A' TOILETS

Description	Product Code	Quantity
SC35BTWRIM	Rimless Junior School 35cm BTW or CC pan	3
SCWHPCI	C/C Cistern For Rimless School Pan	3
STWHTFIXRINGA2	White Ring Seat With Top Fix Hinges	3
ASPRO50BA2	Atlas Professional 50cm Basin 2 Tap Hole	3
FBWB	Fixing Bolts (Pair)	3
ASWHPE	Atlas Full Pedestal	3
TPKIRNONC	Kirkby Non-conc Basin Taps (Pair)	3
TPOPRNEW	Click Clack Basin Waste	3
DOCMAMB	Rimless Deluxe Ambulant Pack - White Rails	1
PORT50BA1LHNN	Portsmouth 50cm 1LHTH Basin No OF/CS	1
BRACKPORT	Portsmouth Fixing Clamping Bracket	1
TPKIRTMV3	Thermo Mixer Tap TMV3 Copper Tails	1
DGRWASTE	Grated Waste	1

#### WC TO KITCHEN STAFFROOM

Description	Product Code	Quantity
	Rimless standard BTW or CC pan	1
	C/C Cistern For Rimless Pan	1
	White Ring Seat With Top Fix Hinges	1
ASPRO50BA2	Atlas Professional 50cm Basin 2 Tap Hole	1
FBWB	Fixing Bolts (Pair)	1
ASWHPE	Atlas Full Pedestal	1
TPKIRNONC	Kirkby Non-conc Basin Taps (Pair)	1
TPOPRNEW	Click Clack Basin Waste	1

#### 462 HAND WASH SINK TO FOOD TECH ROOM

- Contractors choice – wall mounted stainless steel complete with elbow operated lever arm mixer tap and waste / trap etc

#### 464 TOILET ROLL HOLDERS

-1 No. per WC.  
-Model: PHS Micro mini double toilet roll dispenser.

#### 472 HAND DRYERS

- Location – 1 per WC room  
- Model: Warner Howard Airforce (stainless steel finish) or similar approved  
- Installation: Allow for 1 switched fused spur per hand dryer

#### 480 NILON COATED 'J' HOOKS

-Location: To inside of all Toilet cubicle doors, also to contain rubber door stop.

#### EXECUTION

610 INSTALLATION GENERALLY

- Assembly and fixing: Surfaces designed to falls to drain as intended.
- Fasteners: Nonferrous or stainless steel.
- Supply and discharge pipework: Fix before appliances.
- Fixing: Fix appliances securely to structure. Do not support on pipework.
- Jointing and bedding compounds: Recommended by manufacturers of appliances, accessories and pipes being jointed or bedded.
- Appliances: Do not use. Do not stand on appliances.
- On completion: Components and accessories working correctly with no leaks.
- Labels and stickers: Removed.

620 NOGGINGS AND BEARERS

- Noggings, bearers, etc. to support sanitary appliances and fittings: Position accurately. Fix securely.

630 TILED BACKGROUNDS OTHER THAN SPLASHBACKS

- Timing: Complete before fixing appliances.
- Fixing appliances: Do not overstress tiles.

670 INSTALLING CISTERNS

- Cistern operating components: Obtain from cistern manufacturer.
  - Float operated valve: Matched to pressure of water supply.
- Overflow pipe: Fixed to falls and located to give visible warning of discharge.
  - Location: Agreed, where not shown on drawings.

710 INSTALLING TAPS

- Fixing: Secure against twisting.
- Seal with appliance: Watertight.
- Positioning: Hot tap to left of cold tap as viewed by user of appliance.

720 INSTALLING WASTES AND OVERFLOWS

- Bedding: Waterproof jointing compound.
- Fixing: With resilient washer between appliance and backnut.



**N15 INTERNAL FIRE AND SAFETY SIGNAGE SYSTEMS**

To be read with Preliminaries/ General Conditions.

**GENERAL**

110 FIRE SIGNAGE SYSTEMS

- System manufacturer: Contractors Choice

120 SAFETY SIGNAGE SYSTEMS

- System manufacturer: Contractors Choice

PRODUCTS

305 INTERNAL SIGNAGE PRODUCTS GENERALLY

- Standard: To BS 559.
- Colorimetric and photometric properties: To BS ISO 3864-4.

310 ADHESIVE VINYL SHEET

Manufacturer: Contractors Choice

320 ALUMINIUM PLATE

- Manufacturer: Contractors Choice

400 PHOTOLUMINESCENT SIGNS

- Standard: In accordance with Photoluminescent Safety Products Association (PSPA) Standard 002, Part 1.
- Manufacturer: Contractors Choice

EXECUTION

610 FIXING SIGNS GENERALLY

- Installation: To BS 559.
  - Secure, plumb and level.
- Fasteners and adhesives: As section Z20.
- Strength of fasteners: Sufficient to support live and dead loads.
- Fasteners for external signs: Corrosion resistant material or with a corrosion resistant finish. Isolate dissimilar metals to avoid electrolytic corrosion.
- Fixings showing on surface of sign: Must not detract from the message being displayed.

COMPLETION

910 DOCUMENTATION

- Submit:
  - Manufacturer's maintenance instructions.
  - Guarantees, warranties, test certificates, record schedules and logbooks.

**P20 UNFRAMED ISOLATED TRIMS/ SKIRTINGS/ SUNDRY ITEMS**

To be read with Preliminaries/ General Conditions.

110 SOFTWOOD

- Quality of wood and fixing: To BS 1186-3.  
-Species: Contractors Choice

111 SKIRTINGS

- Quality of wood and fixing: To BS 1186-3.  
Species: Painted MDF  
Cut: PAR - square edged  
Dimension: 70 x 20mm

112 CILL BOARDS

- White gloss painted
- 22mm bullnosed MDF

115 SKIRTINGS IN FOOD TECH AND KITCHEN

Vinyl flooring to turn up wall on a coved former

**P21 DOOR/ WINDOW IRONMONGERY**

To be read with Preliminaries/ General conditions.

**GENERAL**

121 IRONMONGERY FROM SINGLE PROPRIETARY RANGE

- Manufacturer: Contractors choice
- Material – Quality Satin Stainless Steel level handles

180 CATEGORY OF DUTY FOR DOOR IRONMONGERY

- Standard: To DD 171.
  - Category of duty of doors: Severe duty.
- General: Durability of ironmongery components to be compatible with stated category of duty of each door leaf.
  - Exclusions: Ironmongery with specific duty or 'category of use' defined elsewhere.
- Documentation: Before placing orders with suppliers submit documentation showing product compliance with stated category of duty.

190 KICKPLATES

- All doors to be fitted with 170mm high satin stainless steel kick plates both sides.

200 FINGER GUARDS

- All doors (apart from those inside staff room and office) to be fitted with hinge finger guards.
- Safehinge Primera extreme duty finger guards.  
(Alufast) or similar approved.

**DOOR HANGING DEVICES**

311 SINGLE AXIS DOOR HINGES

- Standard: To BS EN 1935.
  - Hinges to doors on escape routes and fire/ smoke control doors: CE marked.
- LF5510 100x75mm satin stainless steel shroud bearings butt hinges, jig drilled. Test certified to BSEN 1935 Grade 13 to suit door weight upto 120 kgs and CE marked and Certifire CF351 25 year guarantee. Maintenance Free.

**DOOR SECURING DEVICES**

516 SUITED DOOR LOCKS – on every door.

- Standard: To BS EN 12209.
- Type: Mortice deadlock and thumbturn

**P30 TRENCHES/PIPEWAYS/PITS FOR BURIED ENGINEERING SERVICES**

To be read with Preliminaries/General conditions.

**GENERALLY**

110 ROUTES OF SERVICES BELOW GROUND:

- Agree precise locations of service runs and pipe ducts with the CA.
- Set out clearly and accurately.
- Locate service runs and pipe ducts with temporary marker posts of 75 mm x 75 mm softwood painted white and projecting not less than 600 mm above ground level.

**EXCAVATING/BACKFILLING**

130 TRENCHES:

- Width to be as small as practicable with sides vertical.
- Remove mud, rock projections, boulders and hard spots from trench bottom and trim level.
- Inform CA in advance to give him reasonable opportunity to inspect trench for each section of the work.

140 BACKFILLING GENERALLY: Unless specified otherwise, use material excavated from the trench, laid and well compacted in layers not exceeding 300 mm thick. Do not use heavy compactors before there is 600 mm depth of backfill.

185 WARNING MARKER TAPES:

- During backfilling, lay continuous colour coded, heavy gauge polyethylene identification tapes along the route of gas and electric pipes and ducts
- Location, depth, colour and markings to the requirements of the service undertaker.

**PIPEDUCTS**

200 PIPEDUCTS

- Type: 100mm dia vitrified clay pipe
- Manufacturer and reference: Hepworth HepDuct or equal.
- Accessories: All runs to be fitted with draw-wire.
- Additional requirements: ducts to terminate at or within 50 above finished floor level and be fitted with shallow bends.

220 LAYING PIPEDUCTS:

- Lay pipes straight to line, true to gradient or level on an even, continuous 50 mm bed of the specified bedding material, laid over full width of trench. Provide 50 mm minimum clearance between pipe ducts where they cross.
- Where drawlines are required by the service installer, thread through each pipe during laying. Material, strength and length of drawline to be as specified by the service installer.
- Protect from damage and ingress of debris; temporarily seal all exposed ends during construction.
- Give service undertakers or subcontractors reasonable opportunity to inspect installation prior to backfilling.
- Lay and compact further bedding material to a level not less than 150 mm above crown of pipe.

230 BEDDING FOR PIPEDUCTS: Selected fill, free from vegetable matter, rubbish, frozen soil and excluding lumps and stones retained on a 40 mm sieve. Thoroughly compact by hand in layers not exceeding 150 mm.

**P31 HOLES/CHASES/COVERS AND SUPPORTS FOR SERVICES**

To be read with Preliminaries/ General conditions.

**EXECUTION**

**370 ACCESS COVERS FOR NEW INTERNAL MANHOLE IN KITCHEN**

- Manufacturer: EJ ( Or similar approved)
  - Product reference: PS3900 Double seal, double manhole cover for floor finish infill
- Covers
  - Sizes: 900 x 600
  - Loading grade: 10 tonnes
- Accessories: Recessed lids enabling part concrete & floor finish infill
  - Solid steel base plate
  - Double rubber sealed and locked as standard
  - Secondary inner sealed manhole cover for added odour control
  - Keying in bars fitted within lid recess
  - Specially produced matching lid and frame section
  - Finish: Hot dipped galvanised to BS EN ISO 1461 as standard

**610 COORDINATION**

- Locations and dimensions of holes and chases for services: Submit details.

**620 HOLES AND CHASES IN INSITU CONCRETE**

- Cast in: Holes larger than 10 mm diameter and chases.
- Cutting and drilling:
  - Permitted for holes not larger than 10 mm diameter.
  - Not permitted for holes larger than 10 mm diameter except as indicated on drawings.

**640 HOLES IN STRUCTURAL STEELWORK**

- Cutting and drilling: Not permitted except as indicated on drawings.

**650 HOLES, RECESSES AND CHASES IN MASONRY**

- Locations: To maintain integrity of strength, stability and sound resistance of construction.
- Sizes: Minimum needed to accommodate services.
  - Holes (maximum): 300 x 300 mm.
- Walls of hollow or cellular blocks: Do not chase.
- Walls of other materials:
  - Vertical chases: No deeper than one third of single leaf thickness, excluding finishes.
  - Horizontal or raking chases: No longer than 1 m. No deeper than one sixth of the single leaf thickness, excluding finishes.
- Chases and recesses: Do not set back to back. Offset by a clear distance at least equal to the wall thickness.
- Cutting: Do not cut until mortar is fully set. Cut carefully and neatly. Avoid spalling, cracking and other damage to surrounding structure.

**680 FIXING FLOOR DUCTING/ TRUNKING**

- Bases:
  - Fixing level: So as to provide a flush smooth surface when the floor finish is laid.

690 INSTALLING PIPE SLEEVES

- Sleeves: Fit to pipes passing through building fabric.
- Material: Match pipeline.
- Size: One or two sizes larger than pipe to allow clearance.
- Finish: Install sleeves flush with building finish. In areas where floors are washed down, install protruding 100 mm above floor finish.
- Masking plates: Fit at visible penetrations, including through false ceilings of occupied rooms.

710 SEALING

- completely fill the space, leaving no gaps, finish neatly.

730 INSTALLING ACCESS COVERS/ GRATINGS AND FRAMES

- Bedding and haunching of frames: Continuously.
  - Top of haunching: 30 mm below surrounding surfaces.
- Horizontal positioning of frames:
  - Centred over openings.
  - Install square with joints in surrounding surfaces
- Vertical positioning of frames:
  - Level; or
  - Marry in with levels of surrounding surfaces.
- Permissible deviation in level of external covers and frames: +0 to -6 mm.

## **Q10 KERBS/ EDGINGS/ CHANNELS/ PAVING ACCESSORIES**

To be read with Preliminaries/ General Conditions.

### **TYPES OF KERBS, EDGINGS AND CHANNELS**

- 111 PROPRIETARY PRECAST CONCRETE EDGES
- Standard: To BS EN 1340.
  - Manufacturer: Marshalls.
    - Product reference: Edging.
  - Recycled content: minimum 10%.
  - Designations: Chamfered edge.
  - Size (width x height x length): 63x178x915.
  - Special shapes: none required.
  - Finish: Natural.
  - Colour: Grey.
  - Bedding: Cement mortar.
  - Joints generally: dry joints 2-3mm gap.
- 170 LINEAR SLOT DRAINAGE SYSTEM
- Manufacturer: Aco to similar approved
- Size: Contractor to confirm proposals
- Certified to Load Class A 15 (BS EN 1433:2002).
  - Discreet 10 mm inlet slot tapered to prevent blockage.
  - Debris guard stops the ingress of sand and cement between units during installation.
  - Access chambers as required

### **ROADS/ PAVING ACCESSORIES/ MARKING**

#### **LAYING**

- 510 LAYING KERBS, EDGINGS AND CHANNELS
- Cutting: Neat, accurate and without spalling. Form neat junctions.
    - Long units (450 mm and over) minimum length after cutting: 300 mm.
    - Short units minimum length after cutting: The lower of one third of their original length or 50 mm.
  - Bedding of units: Positioned true to line and levelled along top and front faces, in a mortar bed on accurately cast foundations or on a race of fresh concrete.
  - Securing of units: After bedding has set, secured with a continuous haunching of concrete or on a race of fresh concrete with backing concrete cast monolithically.
- 530 CONCRETE FOR FOUNDATIONS, RACES AND HAUNCHING
- Standard: To BS 8500-2.
  - Designated mix: Not less than GEN0 or Standard mix ST1.
  - Workability: Very low.
- 540 CEMENT MORTAR BEDDING
- General: To section Z21.
  - Mix (Portland cement:sand): 1:3.
    - Portland cement: Class CEM I 42.5 to BS EN 197-1.
    - Sand: to BS EN 12620, grade 0/4 or 0/2 (MP).
  - Bed thickness: 12-40 mm.
- 547 BEDDING/ BACKING OF UNITS ON FRESH CONCRETE RACES
- Standard: To BS 7533-6.

560 HAUNCHING DOWELS

- Dowels: Steel bar to BS 4482.
  - Size: 12 mm diameter, 150 mm long.
- Installation of dowels: Vertically into foundation while concrete is plastic.
  - Centres: 450 mm.
  - Distance from back face of kerb: 50 mm.
  - Projection: 75 mm.
- Haunching: Rectangular cross section, cast against formwork, fully enclosing and protecting dowels.

620 ACCURACY

- Deviations (maximum):
  - Level:  $\pm 6$  mm.
  - Horizontal and vertical alignment: 3 mm in 3 m.



**Q20 GRANULAR SUB BASES TO ROADS / PAVINGS**

To be read with Preliminaries/ General Conditions.

110 THICKNESSES OF SUB-BASE/ SUBGRADE IMPROVEMENT LAYERS

- Thicknesses: See sections:
  - Q22 Coated macadam/ asphalt roads/ pavings.

120 CHECKING CBR OF SUBGRADE: The specified thicknesses of sub-bases are based on an assumed subgrade CBR of 3%. If the subgrade material appears to be different from this, or if there are extensive soft spots, test CBR of subgrade, report results to CA, and if different from the assumed CBR sub-base may need to be revised.

130 HERBICIDE: apply an approved type of herbicide in accordance with manufacturer's recommendations to subgrade of footways.

140 EXCAVATION OF SUBGRADES

- Final excavation to formation/ subformation level: Carry out immediately before compaction of subgrade.
- Soft spots and voids: Give notice.
- Old drainage and service trenches: Remove all abandoned drainage.
- Wet conditions: Do not excavate or compact when the subgrade may be damaged or destabilized.

145 PREPARATION AND COMPACTION OF SUBGRADES

- Timing: Immediately before placing sub-base.
- Soft or damaged areas: Excavate and replace with sub-base material, compacted in layers  
300 mm (maximum) thick.
  - Compaction: Thoroughly, by roller or other suitable means, adequate to resist subsidence or deformation of the subgrade during construction and of the completed roads/ paving's when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.

150 SUBGRADES FOR VEHICULAR AREAS

- Preparation and treatment: To Highways Agency 'Specification for highway works', clauses 616 and 617.

151 SUBGRADE FOR VEHICULAR AREAS:

Immediately before placing sub-base compact subgrade with not less than four passes of a roller weighing 8-10 tonnes or by equivalent other means.

160 SUBGRADE FOR PEDESTRIAN AREAS: Immediately before placing sub-base thoroughly compact subgrade with a roller weighing no less than 2.5 tonnes or equivalent other plant.

170 GEOTEXTILE (GEOFABRIC) FILTER/SEPARATOR MEMBRANE

- Manufacturer: Terram Geosynthetics
- Product reference: Terram 1000
- Jointing: Lapped
- Protected from:
  - Exposure to light, except during laying (maximum five hours)
  - Contaminants.
  - Materials listed as potentially deleterious by geotextile manufacturer
  - Damage, until fully covered by fill
  - Wind uplift, by laying not more than 15 m before covering with fill
- Preparation: Remove humps and sharp projections and fill hollows before laying.

- 175 IMPERMEABLE MEMBRANE Where required
- Manufacturer: Manufacturer's choice.
  - Product reference: Manufacturer's choice.
  - Jointing: 300 mm overlap.
  - Protect from:
    - Exposure to light, except during laying (maximum five hours).
    - Contaminants.
    - Materials listed as potentially deleterious by geotextile manufacturer.
    - Damage, until fully covered by fill.
    - Wind uplift, by laying not more than 15 m before covering with fill.
  - Preparation: Remove humps and sharp projections and fill hollows before laying.
  - Other requirements: None.
- 200 SUBGRADE IMPROVEMENT LAYER (CAPPING)
- Material: To Highways Agency 'Specification for highway works', table 6/1, Class 6F3.
  - Standard: Placed and compacted to Highways Agency 'Specification for highway works', table 6/1, clauses 612 and 613.3, 613.8, 613.9, 613.10 and 613.13.
- 210 GRANULAR MATERIAL: Type 1 to Department of Transport Specification for Highway Works, Clause 803.
- 211 GRANULAR MATERIAL
- Quality: Of a known suitability for use in sub-base, free from excessive dust, well graded,  
all pieces less than 75 mm in any direction, minimum 10% fines value of 50 kN when tested in a soaked condition to BS 812-111 or a resistance to fragmentation of LA50 for  
the  
Los Angeles test to BS EN 1097-2, and in any one layer only one of the following:
    - Crushed rock (other than argillaceous rock) or quarry waste with not more binding material than is required to help hold the stone together.
    - Crushed concrete, crushed brick or tile, free from plaster, timber and metal.
    - Gravel or hoggin with not more clay content than is required to bind the material together, and with no large lumps of clay.
    - Natural gravel.
    - Natural sand.
  - Filling: Spread and levelled in 150 mm maximum layers, each layer thoroughly compacted.
- 212 GRANULAR MATERIAL: Soluble sulphate content (SO<sub>3</sub>) of materials within 1m of substructures must not exceed 1g/litre when tested to BS 1377, Test 10, using a 2:1 water extract. Test if required by CA and obtain approval.

213 GRANULAR DRAINAGE MATERIAL (form PAVE SPECIFICATION)

- Material: Granular sub-base material shall comprise crushed ground, rock or concrete possessing well defined edges. It must be sound, clean, non-friable and free from clay or other deleterious matter. The material must be non-plastic when tested in accordance with BS 1377 Test No 4.
- Quality: The crushed stone used for the laying core and sub-base must have a minimum 10% fines value of 150 kN when tested in accordance with BS812 – 111. Selected test samples shall not be even dried and should be soaked in water at room temperature for 48 hours before testing.
  - Grading:
    - Sub-base upper layer
    - Graded 5mm – 20 mm to BSEN 13242
    - Sub-base lower layer
    - Graded as follows:

BSEN Sieve Size	% Passing
80mm	100
63mm	90-100
40mm	60-80
20mm	15-30
10mm	0-5

214 ALTERNATIVE GRANULAR DRAINAGE MEDIUM  
HIGHWAYS AGENCY TYPE 3 GRANULAR DRAINAGE MATERIAL

Material: Type 3 (open graded) unbound mixture to Highways Agency "Specification for highway works", Clause 805

- Aggregate grading to TABLE 8/7 but modified to achieve minimum 30% void ratio.
- Recycled aggregates permitted such as crushed concrete. When tested in accordance with SHW Clause 710, recycled concrete used in Type 3 (open graded) unbound mixtures shall not contain more than 5% asphalt (Class Ra) and not more than 1% other materials (Class X).

220 FROST SUSCEPTIBLE GRANULAR MATERIAL

- Definition (non frost susceptible material): To Highways Agency 'Specification for highway works clause 801.8.
- Depth of frost susceptible material below final surface of paving (minimum): 450 mm.
- Testing: Test materials used if required and supply certificates.

230 PLACING GRANULAR MATERIAL GENERALLY:

- Ensure that subgrade is free from loose soil, rubbish and standing water.
- Take all necessary precautions to ensure stability of adjacent structures. Place and compact material against or over structures, membranes or buried services in a sequence and manner which will ensure stability and avoid damage.

240 GRANULAR SUB-BASES FOR VEHICULAR AREAS:

Spread and level in layers and as soon as possible thereafter compact each layer. Maximum depth of compacted layer, type of compaction plant and minimum number of passes per layer to be as Department of Transport Specification for Highway Works, table 8/1.

- 241 LAYING GRANULAR SUB-BASES FOR VEHICULAR AREAS
- Proposals: Well in advance of starting work submit details of:
    - Maximum depth of each compacted layer.
    - Type of plant.
    - Minimum number of passes per layer.
  - General: Spread and levelled in layers. As soon as possible thereafter compact each layer.
  - At drainage fittings, inspection covers, perimeters and where local excavation and backfilling has taken place: Take particular care to compact fully.
  - Defective areas: Remove loose, segregated or otherwise defective areas to the full thickness of the layer and lay and compact new material.
  - Sub-base surface after compaction and immediately before overlaying: Uniformly well closed and free from loose material, cracks, ruts or hollows.
- 250 LAYING GRANULAR SUB-BASES FOR PEDESTRIAN AREAS
- General: Spread and levelled.
  - Compaction:
    - Timing: As soon as possible after laying.
    - Method: By roller or other suitable means, adequate to resist subsidence or deformation of the sub-base during construction and of the completed paving when in use. Take particular care to compact fully at intrusions, perimeters and where local excavation and backfilling has taken place.
- 310 ACCURACY: Maximum permissible deviation from the required levels, falls and cambers to be as follows:
- |          | Roads         | Footways | Recreation areas |
|----------|---------------|----------|------------------|
|          | Parking Areas |          |                  |
| Subgrade | <u>±</u> 25mm |          | <u>±</u> 20mm    |
| Sub-base | <u>±</u> 20mm |          | <u>±</u> 12mm    |
- 320 SURFACES TO RECEIVE SAND BEDDING FOR PAVING TO SECTION Q25.
- Blind surface: As necessary before compaction to ensure that surface is tight and dense enough to prevent laying course sand being lost into it during construction or use.
  - Material: Sand.
- 330 COLD WEATHER WORKING
- Frozen materials: Do not use.
  - Freezing conditions: Do not place fill on frozen surfaces. Remove material affected by frost. Replace and recompact if not damaged after thawing.
- 340 PROTECTION:
- Cover sub-bases as soon as practicable with subsequent layers, specified elsewhere.
- Prevent damage to subgrades and sub-bases from construction traffic, construction operations and inclement weather.

## **Q22 ASPHALT ROADS/ PAVINGS**

To be read with Preliminaries/ General Conditions.

### **TYPES OF PAVING**

- 115 COATED MACADAM PAVING ON NEW SUB-BASE, WHERE EXISTING GROUND IS SOFT OR FOLLOWING TRENCHING/MAJOR ADJUSTMENT OF EXISTING LEVELS
- Materials and workmanship: To Highways Agency Manual of contract documents for highway works, Volume 1: Specification for highway works including all Amendments current at issue date. BS 4987.  
Min Thickness 90 mm.
  - Basecourse: 20mm Dense bitumen macadam to BS4987 Tables 15 & 16.  
Thickness 70 mm
  - Wearing course: 6mm Medium Graded Macadam to BS498 Tables 32 & 33.  
Thickness 20 mm
  - Surface treatment: Brush in sealing grit on completion.
- 180 SURFACE TREATMENT TO EXISTING PAVING.
- Base: existing tarmac.
  - Preparation: Cut out depressions, fill to match existing surface and compact.
  - Surface to receive dressing: Clean and dry. All patching complete.
  - Binder: as manufacturer's recommendations.
  - Finish: Wearing course: 6mm Medium Graded Macadam to BS498 Tables 32 & 33.  
Thickness 20 Mm  
-Slip/ skid resistance: required to BS7976.
- 195 HARD LANDSCAPING MATERIALS SPECIFICATION
- Minimum 'BRE Green Guide to Specification Online' rating: A.

### **PREPARATORY WORK/ REQUIREMENTS**

- 220 BITUMINOUS MATERIALS GENERALLY
- Suppliers: Submit names 2 weeks (minimum) before starting work.
  - Test Certificates: At the time of delivery for each manufacturing batch submit certificate:  
-Confirming compliance with this specification and the relevant British Standard  
-Stating full details of composition of mix.
- 240 ACCEPTANCE OF SUB-BASE
- Surface: Sound, clean and suitably close textured.
  - The base is sound, free of debris, mud and soft spots,
  - Levels and falls: To be within the specified tolerances:  
-Vehicular areas: +10 to -30mm.  
-Pedestrian areas:  $\pm 12$ mm.  
-Drainage outlets: 0 to -10mm of the required finished level.
  - Kerbs and edgings: Complete, adequately bedded and haunched and to the required levels.
- 250 ABUTMENTS
- Edges of manholes, kerbs and other abutments: Clean and paint with a thin uniform coating of bitumen.

LAYING

310 LAYING GENERALLY

- Preparation: Remove all loose material, rubbish and standing water.
- Adjacent work: Form neat junctions. Do not damage.
- Channels, kerbs, inspection covers etc: Keep clean.
- New paving:
  - Keep traffic free until it has cooled to prevailing atmospheric temperature.
  - Do not allow rollers to stand at any time.
  - Prevent damage.
  - Lines and levels: With regular falls to prevent ponding.
  - Overall texture: Smooth, even and free from dragging, tearing or segregation.
  - State on completion: Clean.

330 LEVELS

- Permissible deviation from the required levels, falls and cambers (maximum): In accordance with BS 594987, Table 2.

351 CONTRACTOR'S USE OF PAVEMENTS:

- Final surfacing:
  - Timing: Defer laying until as late as practicable.
  - Immediately before laying final surfacing: Clean and make good the roadbase/basecourse. Allow to dry. Uniformly apply, without puddles, a tack coat of sprayed bitumen emulsion of a suitable grade to BS 434: Part 1 at 0.3 to 0.5 litres/m<sup>2</sup>. Allow emulsion to break completely before applying surfacing.

**Q28 TOPSOIL, GROWING MEDIA AND AMELIORANTS**

To be read with Preliminaries/ General Conditions.

**SYSTEM OUTLINE**

200 GRADING SUBSOIL

- General: Grade to smooth flowing contours to achieve specified finished levels of topsoil.
- Areas of thicker topsoil: Excavate locally.

210 LIGHT AND NONCOHESIVE SUBSOILS

- Loosening: Use a three tine ripper, drawn 300 mm deep at 600 mm centres in two directions obliquely, when ground conditions are reasonably dry.

220 STIFF CLAY AND COHESIVE SUBSOILS

- Loosening: Use a single tine ripper, driven 450 mm deep at 1 m centres in two directions obliquely, when ground conditions are reasonably dry.

250 SURFACE PREPARATION

- Stones: Immediately before spreading topsoil remove stones larger than 75 mm.
- Other items: Remove arisings, contaminants and general debris.

330 SURPLUS TOPSOIL TO BE RETAINED

- Generally: Spread and level on site:
  - Locations: to be agreed.
  - Protected areas: Do not raise soil level within root spread of trees that are to be retained.

380 CONTAMINATION

- General: Do not use topsoil contaminated with subsoil, rubbish or other materials that are:
  - Corrosive, explosive or flammable.
  - Hazardous to human or animal life.
  - Detrimental to healthy plant growth.
- Subsoil: In areas to receive topsoil, do not use subsoil contaminated with the above materials.
- Give notice: If any evidence or symptoms of soil contamination are discovered on the site, or in topsoil to be imported.

410 HANDLING TOPSOIL

- Aggressive weeds: Give notice and obtain instructions before moving topsoil.
- Plant: Select and use plant to minimize disturbance, trafficking and compaction.
- Contamination: Do not mix topsoil with:
  - Subsoil, stone, hardcore, rubbish or material from demolition work.
  - Other grades of topsoil.
- Multiple handling: Keep to a minimum. Use topsoil immediately after stripping.
- Wet conditions: Handle topsoil in the driest condition possible. Do not handle during or after heavy rainfall or when it is wetter than the plastic limit.

420 SPREADING TOPSOIL

- Temporary roads/surfacing: Remove before spreading topsoil.
- Layers:
  - Depth (maximum): 150 mm.
  - Gently firm each layer before spreading the next.
- Depths after firming and settlement (minimum) 100mm.
- Crumb structure: Do not compact topsoil. Preserve a friable texture of separate visible crumbs wherever possible.

450 FINISHED LEVELS OF TOPSOIL AFTER SETTLEMENT

- Above adjoining paving or kerbs: 30 mm.
- Below dpc of adjoining buildings: Not less than 150 mm.
- Shrub areas: Higher than adjoining grass areas by 30 mm.
- Within root spread of existing trees: Unchanged.
- Adjoining soil areas: Marry in.
- Thickness of turf or mulch: Included.



**Q30 SEEDING/TURFING**

To be read with Preliminaries/General conditions.

**GENERAL INFORMATION/REQUIREMENTS**

115 SEEDED AND TURFED AREAS

- Growth and development: Healthy, vigorous grass sward, free from the visible effects of pests, weeds and disease.
- Appearance: A closely knit, continuous ground cover of even density, height and colour.

120 CLIMATIC CONDITIONS

- General: Carry out the work while soil and weather conditions are suitable.

145 WATERING

- Quantity: Wet full depth of topsoil.
- Application: Even and without displacing seed, seedlings or soil.
- Frequency: As necessary to ensure the establishment and continued thriving of all seeding/turfing.

150 WATER RESTRICTIONS

- Timing: If water supply is or is likely to be restricted by emergency legislation do not carry out seeding/turfing until instructed. If seeding/turfing has been carried out, obtain instructions on watering.

160 NOTICE

- Give notice before:
  - Setting out.
  - Seeding or turfing.
  - Visiting site during maintenance period.
- Period of notice: 2 weeks.

PREPARATION

250 CULTIVATION

- Compacted topsoil: Break up to full depth.
- Tilth: Reduce top 100 mm of topsoil to a tilth suitable for blade grading (10 mm down particles).
- Material brought to the surface: Remove stones and clay balls larger than 50 mm in any dimension, roots, tufts of grass, rubbish and debris.

260 GRADING

- Topsoil condition: Reasonably dry and workable.
- Contours: Smooth and flowing, with falls for adequate drainage. Remove minor hollows and ridges.
- Finished levels after settlement: 25 mm above adjoining paving, kerbs, manholes etc.
- Blade grading: May be used to adjust topsoil levels provided depth of topsoil is nowhere less than 150 mm.
- Give notice: If the required levels cannot be achieved by movement of the existing soil.

280 FINAL CULTIVATION

- Timing: After grading and fertilizing.
- Seed bed: Reduce to fine, firm tilth with good crumb structure.
  - Depth: 25 mm.
  - Surface preparation: Rake to a true, even surface, friable and lightly firmed but not over compacted.
  - Remove surface stones/earth clods exceeding:  
General areas: 50 mm.

- Fine lawn areas: 25 mm.
  - Adjacent levels: Extend cultivation into existing adjacent grassed areas sufficient to ensure full marrying in of levels.
- 450 NEWLY PLANTED TREES
- Surrounding turf: Neatly cut away to a diameter of 800 mm around individual trees. Leave soil exposed.
- CUTTING/MAINTENANCE
- 530 FIRST CUT OF GRASSED AREAS
- Timing: When grass reaches 50 mm high and is reasonably dry.
  - Preparation: Before cutting, remove debris, litter, and stones and earth clods larger than 25 mm in any dimension.
  - Height of first cut: 25 mm.
  - Arisings: remove from site.
- 605 MAINTENANCE
- Duration: Carry out the operations in clauses 610 to 685 from completion of seeding/turfing until end of defects period.
- 610 FAILURES OF SEEDING/TURFING
- General: Grassed areas that have failed to thrive (unless due to theft or malicious damage), during the period stated in clause 605, will be regarded as defects due to materials or workmanship not in accordance with the Contract. Make good by recultivation and reseeded/returfing.
  - Timing of making good: Submit proposals.

## **Q40 FENCING**

To be read with Preliminaries/ General conditions.

### **FENCING SYSTEMS**

#### **350 STEEL PALADIN MESH FENCING**

- Manufacturer: Contractors Choice
- Standard: To BS 1722-12, Twin 868
- Height: to suit gap under modular building
  - Finish: Polyester powder coated – colour TBC from standard range.
- Fixings: Bolted
- Centres of posts (maximum): 2.75 m.
- Method of setting posts where required:
  - Holes: 350 x 350mm square or 450mm dia
  - Embedded length: To BS 1722-12 tables 1 and 2
  - Completely filled to ground level with concrete.

Note – fence panels can be bolted to masonry piers under modular building

- Bottom of fencing: Maximum ground clearance 50mm
- Allow for lockable pedestrian gate for maintenance access under modular building
- Conformity: Submit manufacturer's and installer's certificates, to BS 1722-12.

#### **410 HOOP TOPPED STEEL FENCE (12mm steel bar) INCORPORATING GATES AS PER DRAWINGS**

- Manufacturer: Contractors Choice
- Standard: To BS 1722-12, type GP24.
- Height: 1200
  - Finish: Polyester powder coated green
- Fixings: Bolted
- Method of setting posts:
  - Holes: 350 x 350mm square or 450mm dia
  - Embedded length: To BS 1722-12 tables 1 and 2
  - Completely filled to ground level with concrete.
- Bottom of fencing: Maximum ground clearance 50mm

### **EXECUTION**

#### **710 INSTALLATION GENERALLY**

- Set out and erect:
  - Alignment: Straight lines or smoothly flowing curves.
  - Tops of posts: Following profile of the ground.
  - Setting posts: Rigid, plumb and to specified depth, or greater where necessary to ensure adequate support.
  - Fixings: All components securely fixed.

#### **715 COMPETENCE**

- Operatives: Contractors must employ competent operatives.
- Qualifications: Submit certification of training and experience.

720 SETTING POSTS IN CONCRETE

- Standard: To BS 8500-2.
- Mix: Designated concrete not less than GEN1 or Standard prescribed concrete not less than ST2.
- Alternative mix for small quantities: 50 kg Portland cement to 150 kg fine aggregate to 250 kg 20 mm nominal maximum size coarse aggregate, medium workability.
- Admixtures: Do not use.
- Holes: Excavate neatly and with vertical sides.
- Filling: Position post/ strut and fill hole with concrete to not less than the specified depth, well rammed as filling proceeds and consolidated.
- Backfilling of holes not completely filled with concrete: Excavated material, well rammed and consolidated.

730 EXPOSED CONCRETE FOUNDATIONS

- Filling: Compact until air bubbles cease to appear on the upper surface.
- Finishing: Weathered to shed water and trowelled smooth.

780 MAKING GOOD GALVANIZED SURFACES

- Treatment of minor damage (including on fasteners and fittings): Low melting point zinc alloy repair rods or powders made for this purpose, or at least two coats of zinc-rich paint to BS 4652.
- Thickness: Apply sufficient material to provide a zinc coating at least equal in thickness to the original layer.

**Q41 BARRIERS/ GUARDRAILS**

To be read with Preliminaries/ General conditions.

**TYPES OF BARRIERS/ GUARDRAILS**

- 240 HANDRAIL SYSTEM - CANTILEVERED/BALLASTED KEE KLAMP ON ROOF
- System manufacturer: KEE KLAMP
  - Material: STEEL
    - Cross section: TUBULAR
    - Finish: Galv
  - Height above ground surface (to upper surface of handrail):
    - Upper handrail: 1100
    - Lower handrail: 550
  - Accessories: ballasted cantilevered spreader feet with not through fixings into roof membrane
- Allow for 2 No. self closing gates
- 260 ARMCO CRASH BARRIER
- System manufacturer: Contractors Choice
  - Material: STEEL
    - Finish: Galv
  - Height above ground surface: 560mm

**PERFORMANCE/ INSPECTION/ TESTING**

- 300 CONTRACTOR'S STRUCTURAL DESIGN
- Design responsibility: Lateral load
  - Requirement:
    - Generally: As section B50 or B51. Submit drawings and schedules in accordance with the designated code of practice and to satisfy the performance criteria specified in section B50 or B51.
    - Modifications: None
  - 
  - Member sizes and locations: Contractors choice

**INSTALLATION**

- 420 ALIGNMENT
- Erection: Fences/ barriers to present a flowing alignment. Tops of posts to follow ground profile.
  - Tolerance:  $\pm 30$  mm of prescribed alignment and, within any 10 m length,  $\pm 15$  mm from the straight or required radius.
- 430 ERECTION GENERALLY
- Protection: Coat all internal and external surfaces of aluminium and steel posts below and up to 150 mm above ground level, with two coats of bituminous paint to BS 6949 type 2, unless other applied surface finish is specified.
  - Prevention of electrolytic corrosion: Isolate dissimilar metals.
  - Steel components: Do not drill, cut or weld after galvanizing.

480 CONCRETE FOUNDATIONS FOR POSTS

- Excavations: To have vertical sides. Dispose of all arisings. Blind excavation bottoms with a 50 mm layer of concrete.
- Concrete mix: To BS 8500-2, designated mix not less than GEN 4 or Standard mix not less than ST5. Do not use admixtures.
- Placing concrete: Fill holes to not less than the specified depth and fully compact. Do not backfill for at least four days.
- Temporary support to posts: Provide for at least four days after placing concrete.

490 DAMAGE REPAIR TO GALVANIZED SURFACES

- Areas of repair: Minor damage, including fixings and fittings.
  - Total area of repair not to exceed 0.5% of total surface area.
  - Each area not to exceed 1000 mm<sup>2</sup>.
- Renovation: Use low melting point zinc alloy repair rods or powders or at least two coats of zinc-rich paint to BS 4652.

500 PRESERVATIVE TREATED TIMBER

- Surfaces exposed by minor cutting and drilling: Treat with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

## **R10 RAINWATER DRAINAGE SYSTEMS**

To be read with Preliminaries/ General Conditions.

### **SYSTEM PERFORMANCE**

#### 210 DESIGN

- Design: Complete the design of the rainwater drainage system.
- Standard:
  - To BS EN 12056-3, clauses 3–7, Annex A and National Annexes.
  - To BS EN 12056-5, clauses 3, 4, 6 and 11.
- Proposals: Submit drawings, technical information, calculations and manufacturers' literature.

#### 221 COLLECTION AND DISTRIBUTION OF RAINWATER

- General: Complete, and without leakage or noise nuisance.

### **PRODUCTS**

#### 325 COMPOSITE GUTTERS

- Manufacturer: Contractors Choice - Part of Proprietary roof installation

#### 425 PVC-U PIPEWROK – SEALED (TO INTERNAL DOWNPIPES)

Pipes and fittings: PVC-u to BS EN 1329: 2000 / BS 4514: 2001 Kite mark certified

Manufacturer: *Marley Plumbing and Drainage*

Sizes: To be sized by contractor

Colour: Black

Accessories: Access pipes and caps for cleaning and testing.

Method of jointing: Ring seal or solvent weld

Method of fixing vertical pipework:

Socket and barrel pipe clips at a maximum of 2.0m centres

Method of fixing horizontal / suspended pipework:

Marley pipe support system components with purpose made brackets and accessories supported at 1.0m centres

### **INSTALLATION GENERALLY:**

Installation to be carried out in accordance with BS EN 12056 Part 3: 2000 and the manufacturers recommended details; including BSEN 12056-3:2000 recommendation that warning pipes are fitted in internal rainwater pipes.

Fit temporary caps to prevent the ingress of debris as installation takes place.

Where not specified otherwise use plated, sherardized, galvanised or non-ferrous fastenings of suitable size for the purpose and compatible with the structure.

Provide access fittings and rodding eyes as necessary in convenient locations to permit adequate cleaning and testing as pipework.

### **FIXING PIPEWORK:**

Install all pipework using suitable brackets at recommended vertical or horizontal fixing centres.

Fix any horizontal pipework to ensure that a uniform fall is obtained and to a specified gradient.

Provide additional supports as necessary to support junctions and changes in direction. Fix every vertical length of pipe using socket clips to provide support and anchor points together with intermediate pipe clips to maintain alignment

Ensure that vertical pipework to each storey is self-supporting to prevent weight being transferred to the floor below

Where pipes pass through walls or floors isolate from structure with sleeves where necessary.

Allow for thermal movement within ring seal joints and ensure that clearances are maintained during installation.

Fit ring seal sockets where necessary and anchor fittings to accommodate thermal movement.

### **JOINTING PIPEWORK**

Joint pipework using ring seal or solvent weld techniques.

Cut ends of pipes to be square with burrs and swarf removed.

Chamfer cut pipe ends before inserting into ring seal sockets.

Ensure that jointing surfaces are clean, and ring seal joints are lubricated prior to assembly.

Remove surplus solvent cement from joints.

### **PIPEWORK TEST:**

To be carried out in accordance with BS EN 12056 Part 3: 2000 clause NE 4.2

Temporarily seal open ends of pipework with plugs.

Connect a "U" tube water gauge and pump air into the system via a plug or access point

until the gauge registers 38mm.

Allow a period for temperature stabilisation, after which the pressure of 38mm is to be maintained without loss for not less than 3 minutes.

#### 450 INSULATION TO INTERNAL PIPELINES

- Manufacturer: Generous provision to prevent condensation and prevent sound of falling water being heard from within building. In accordance with building regs and to manufacturers recommendations.

#### EXECUTION

#### 600 PREPARATION

- Work to be completed before commencing work specified in this section:
  - Below ground drainage. Alternatively, make temporary arrangements for dispersal of rainwater without damage or disfigurement of the building fabric and surroundings.
  - Painting of surfaces which will be concealed or inaccessible.

#### 605 INSTALLATION GENERALLY

- Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
- Plastics and galvanized steel pipes: Do not bend.
- Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
- Protection:
  - Fit purpose made temporary caps to prevent ingress of debris.
  - Fit access covers, cleaning eyes and blanking plates as the work proceeds.

#### 615 SETTING OUT EAVES GUTTERS – TO FALLS

- Setting out: To true line and even gradient to prevent ponding or backfall. Position high points of gutters as close as practical to the roof and low points not more than 50 mm below the roof.
- Outlets: Align with connections to below ground drainage.

#### 616 SETTING OUT EAVES GUTTERS – LEVEL



- Setting out: Level and as close as practical to the roof.
  - Outlets: Aligned with connections to below ground drainage.
- 630 INSTALLING RAINWATER OUTLETS
- Fixing: Secure. Fix before connecting pipework.
  - Junctions between outlets and pipework: Accommodate movement in structure and pipework.
- 635 FIXING PIPEWORK
- Pipework: Fix securely, plumb and/ or true to line.
  - Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
  - Externally socketed pipes and fittings: Fix with sockets facing upstream.
  - Additional supports: Provide as necessary to support junctions and changes in direction.
    - Provide a loadbearing support at least at every storey level.
    - Tighten fixings as work proceeds so that every storey is self supporting.
    - Wedge joints in unsealed metal pipes to prevent rattling.
  - Wall and floor penetrations: Isolate pipework from structure.
    - Pipe sleeves: As section P31.
    - Masking plates: Fix at penetrations if visible in the finished work.
  - Expansion joint pipe sockets: Fix rigidly to buildings. Elsewhere, provide brackets and fixings that allow pipes to slide.
- 640 FIXING VERTICAL PIPEWORK
- Bracket fixings: Fixed via lina adaptors to Steel columns.
  - Distance between bracket fixing centres (maximum): 1200.
- 645 FIXING LOW GRADIENT PIPEWORK
- Bracket fixings: Suspended from purlins.
  - Distance between bracket fixing centres (maximum): 900.
- 650 JOINTING PIPEWORK AND GUTTERS
- General: Joint with materials and fittings that will make effective and durable connections.
  - Jointing differing pipework and gutter systems: Use adaptors intended for the purpose.
  - Cut ends of pipes and gutters: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
  - Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
  - Junctions: Form with fittings intended for the purpose.
  - Jointing material: Strike off flush. Do not allow it to project into bore of pipes and fittings.
  - Surplus flux, solvent jointing materials and cement: Remove.
- 675 CUTTING COATED PIPEWORK AND GUTTERS
- Cutting: Recoat bare metal.
- 680 FIXING INSULATION TO INTERNAL PIPELINES AND GUTTERS
- Fixing: Secure and neat. Provide continuity at supports and leave no gaps. Fix split pipe insulation with the split on 'blind' side of pipeline.
  - Timing: Do not fit insulation until completion of pipe airtightness or leakage testing.
- 685 IDENTIFICATION OF INTERNAL RAINWATER PIPEWORK
- Standard: In accordance with Water Regulations Advisory Scheme (WRAS) Information and guidance note 9-02-05 and BS 8515.
- 690 ELECTRICAL CONTINUITY - PIPEWORK
- Joints in metal pipes with flexible couplings: Clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.

#### COMPLETION

- 905 INTERNAL PIPEWORK TEST – ENGLAND, WALES, IRELAND AND NORTHERN IRELAND
- Preparation: Temporarily seal open ends of pipework with plugs.
  - Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug.
  - Testing: Pump air into pipework until gauge registers 38 mm.
  - Required performance:
    - Allow a period for temperature stabilization, after which the pressure of 38 mm is to be maintained without loss for at least 3 minutes.
- 910 GUTTER TEST
- Preparation: Temporarily block all outlets.
  - Testing: Fill gutters to overflow level and after 5 minutes closely inspect for leakage.

## **R11 ABOVE GROUND FOUL DRAINAGE SYSTEMS**

To be read with Preliminaries/ General Conditions.

### **GENERAL**

- 115 ABOVE GROUND FOUL DRAINAGE SYSTEM
- Sanitary and floor drainage outlets: Contractors Design

### **SYSTEM PERFORMANCE**

- 210 DESIGN
- Design: Complete the design of the above ground foul drainage system.
  - Standards: To BS EN 12056-1 and BS EN 12056-2, and in accordance with BS EN 12056-2 National Annexes NA-NG.
    - System type to BS EN 12056-2: System III.
  - Proposals: Submit drawings, technical information, calculations and manufacturers' literature.
- 220 COLLECTION AND DISTRIBUTION OF FOUL WATER
- General: Quick, quiet and complete, self-cleansing in normal use, without blockage, crossflow, backfall, leakage, odours, noise nuisance or risk to health.
  - Pressure fluctuations in pipework (maximum):  $\pm 38$  mm water gauge.
  - Water seal retained in traps (minimum): 25 mm.

### **EXECUTION**

- 601 INSTALLATION GENERALLY
- Standard: To BS EN 12056-5.
  - Components: From the same manufacturer for each type of pipework.
  - Electrolytic corrosion: Avoid contact between dissimilar metals where corrosion may occur.
  - Plastics and galvanized steel pipes: Do not bend.
  - Allowance for thermal and building movement: Provide and maintain clearance as fixing and jointing proceeds.
  - Concealed or inaccessible surfaces: Decorate before starting work specified in this section.
  - Protection:
    - Purpose made temporary caps: Fit to prevent ingress of debris.
    - Access covers, cleaning eyes and blanking plates: Fit as the work proceeds.
- 605 PIPE ROUTES
- General: The shortest practical, with as few bends as possible.
    - Bends in wet portion of soil stacks: Not permitted.
    - Routes not shown on drawings: Submit proposals before commencing work.
- 610 FIXING PIPEWORK
- Pipework: Fix securely plumb and/ or true to line. Fix discharge stack pipes at or close below socket collar or coupling.
  - Branches and low gradient sections: Fix with uniform and adequate falls to drain efficiently.
  - Externally socketed pipes and fittings: Fix with sockets facing upstream.
  - Additional supports: Provide as necessary to support junctions and changes in direction.
  - Vertical pipes: Provide a load bearing support not less than every storey level. Tighten fixings as work proceeds so that every storey is self supporting.
  - Wall and floor penetrations: Isolate pipework from structure, e.g. with pipe sleeves.
    - Masking plates: Fix at penetrations if visible in the finished work.

- Expansion joint sockets: Fix rigidly to the building.
  - Fixings: Allow the pipe to slide.
- 625 JOINTING FLOOR CHANNELS
- Jointing: Silicone sealant.
- 630 JOINTING PIPEWORK – GENERALLY
- General: Joint with materials, fittings and techniques that will make effective and durable connections.
  - Jointing differing pipework systems: With adaptors intended for the purpose.
  - Cut ends of pipes: Clean and square. Remove burrs and swarf. Chamfer pipe ends before inserting into ring seal sockets.
  - Jointing or mating surfaces: Clean and, where necessary, lubricate immediately before assembly.
  - Junctions: Form with fittings intended for the purpose.
  - Jointing material: Do not allow it to project into bore of pipes and fittings.
  - Surplus flux, solvent jointing materials and cement: Remove from joints.
- 660 JOINTING PIPEWORK – ABS, MUPVC, PVC-C AND PVC-U
- Jointing: Solvent welded with lubricating ringseal joints at no more than 1.8m spacing, to allow for movement.
- 680 ELECTRICAL CONTINUITY
- Joints in metal pipes with flexible couplings: Make with clips (or suitable standard pipe couplings) supplied for earth bonding by pipework manufacturer to ensure electrical continuity.
- 685 IDENTIFICATION OF INTERNAL FOUL DRAINAGE PIPEWORK
- Markings: To BS 1710.
  - Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
  - Locations: At 500 mm centres, junctions and both sides of slabs, valves, appliances, bulkheads and wall penetrations.
- 690 IDENTIFICATION OF INTERNAL GREY WATER DRAINAGE PIPEWORK
- Grey water: As defined in BS EN 12056-1, clause 3.1.
  - Markings: To BS 1710:
  - Type: Integral lettering on pipe wall, self-adhesive bands or identification clips.
  - Locations: At 500 mm centres, junctions and both sides of slabs, valves, appliances, bulkheads and wall penetrations.
- 695 DISCHARGE AND VENTILATING STACKS
- Terminations: Perforated cover or cage that does not restrict airflow.
    - o -Material: As discharge stack.
- 700 INSTALLING AIR ADMITTANCE VALVES
- Position: Vertical, above flood level of highest appliance served and clear of insulation materials (other than the manufacturer's insulating cover).
  - Connection to discharge stack: Allow removal for rodding, e.g. ring seal.
  - Roof spaces and other unheated locations: Fit manufacturer's insulating cover.

## COMPLETION

- 905 PIPEWORK AIRTIGHTNESS TEST
- Preparation:
    - o -Open ends of pipework: Temporarily seal using plugs.
  - -Test apparatus: Connect a 'U' tube water gauge and air pump to pipework via a plug or through trap of an appliance.
  - Testing: Pump air into pipework until gauge registers 38 mm.
  - Required performance: Pressure of 38 mm is to be maintained without loss for at least three minutes.
- 915 PREHANDOVER CHECKS
- Temporary caps: Remove.
  - Permanent blanking caps, access covers, rodding eyes, floor gratings and the like: Secure complete with fixings.
- 920 SUBMITTALS
- Manufacturer's instructions for grease traps: Handover at completion.

## **R12 BELOW GROUND DRAINAGE SYSTEMS**

To be read with Preliminaries/ General Conditions.

### **2 EXISTING DRAINS**

- Setting out: Before starting work, check levels and positions of existing drains, inspection chambers and manholes against drawings. Report discrepancies.

### **4 IN SITU CONCRETE FOR USE IN DRAINAGE BELOW GROUND**

- Standard: To BS 8500-2.
- Concrete: Designated, GEN1, as section E10 .

### **14 PLASTICS PIPELINES**

- Pipes, bends and junctions: PVC-U to BS EN 1401-1.
  - Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Recycled content: None permitted.
- Sizes: As drawing .
- Type of subsoil: Clay, sandy clay - firm .
- Bedding class: P .
- Warning marker tape: Not required .

### **19 EXCAVATING PIPE TRENCHES**

- Trench from bottom up to 300 mm above crown of pipe: With vertical sides.
  - Width: As small as practicable but not less than external diameter of pipe plus 300 mm.
- Type of subsoil: Where the type of subsoil at the level of the crown of the pipe differs from that stated for the type of pipeline, give notice.
- Timing: Excavate to formation immediately before laying beds or pipes.
- Mud, rock projections, boulders and hard spots: Remove. Replace with bedding material, well consolidated.
- Local soft spots: Harden by tamping in bedding material.

### **21 BEDDING AND JOINTING**

- Laying pipes: To true line and regular gradient on even bed for full length of barrel with sockets (if any) facing up the gradient.
- Jointing: Lubricate. Leave gaps at ends of spigots to allow for movement.

### **23 CLASS D NATURAL BED**

- Trench bottom: Hand trim to accurate levels, levelling up any overdig with compacted spoil.
- Pipes: Cut holes for couplings/ sockets and lay pipes resting uniformly on their barrels, adjusting to line and gradient. Do not use hard packings under pipes.
- Backfilling: After initial testing, backfill to 150 mm above crown of pipe with a protective cushion of selected fill, free from vegetable matter, rubbish and frozen soil and material retained on a 40 mm sieve. Thoroughly hand compact in 100 mm layers.

### **27 CLASS P FULL DEPTH GRANULAR SUPPORT**

- Granular material: To Water Industry Specification WIS 4-08-02 (as amended by WIS 4-08-02A, 2008).
- Bedding: Granular material, compacted to a thickness of 100 mm (minimum). Scoop out locally at couplings and sockets and lay pipes digging slightly into bed and resting uniformly on their barrels. Adjust to line and gradient.
- Granular support: After initial testing, lay and compact by hand more granular material uniformly to 100 mm above crown of pipe.

39 CLASS Z CONCRETE SURROUND

- Concrete blinding: 25 mm thick, over full width of trench.
- Temporary pipe support: Folding wedges of compressible board, pipe inverts 100 mm (minimum) above blinding.
- Vertical construction joints: At face of flexible pipe joints using 18 mm thick compressible board precut to profile of pipe. Fill gaps between spigot and socket with resilient material to prevent entry of concrete.
- Concrete surround: After testing, place and compact concrete for full width of trench to encase pipe to 150 mm above crown.

41 TRENCHES LESS THAN 1 M FROM FOUNDATIONS

- Class Z concrete surround: Provide in locations where bottom of trench is lower than bottom of foundation.
  - Top of concrete: Higher than bottom of foundation.

44 BENDS AT BASE OF SOIL STACKS

- Bends: 90° nominal rest bend with a minimum radius of 200 mm to centreline of the pipe.
- Height of invert of horizontal drain at base of stack below centreline of lowest branch pipe (minimum): 450 mm.
- Stabilizing bends: Bed in concrete without impairing flexibility of couplings.

47 DIRECT CONNECTION OF GROUND FLOOR WCS TO DRAINS

- Drop from crown of WC trap to invert of drain (maximum): 1.3 m.
- Horizontal distance from the drop to a ventilated drain (maximum): 6 m.

50 GULLIES - BACK INLET

- Standards:
  - Clay: To BS EN 295-1 and Kitemark certified, or Agrément certified.
  - Plastics: To BS 4660 and Kitemark certified, or Agrément certified.
- Material: Plastics .
- Manufacturer: Contractor's choice .
  - Product reference: Contractor's choice .
- Sizes: 600 x 300 mm .
- Outlet sizes: DN 100 .
- Covers: Grating type .
  - Product reference: Contractor's choice .
  - Type: Hinged grating .
  - Material: Galvanized steel .
  - Sizes: 150 x 150 mm .
  - Loading grade to BS EN 124: B125 .
- Silt buckets: Aluminium .
  - Product reference: Contractor's choice .

54 ACCESS POINTS - FOUL DRAINAGE

- Standard: To BS 4660 and Kitemark certified, to BS EN 13589-1, or Agrément certified.
- Manufacturer: Contractor's choice .
- Nominal diameter: 150mm .
- Bases:
  - Product reference: Contractor's choice .
- Raising pieces:
  - Product reference: Contractor's choice .
  - Heights: 100 mm .
- Access covers and frames:
  - Product reference: Contractor's choice .
  - Loading grades to BS EN 124: B125 .

58 INSTALLATION OF FITTINGS

- Appearance: Square with and tightly jointed to adjacent construction as appropriate.
- Bedding and surround of fittings, traps, etc: Concrete, 150 mm thick.
- Permissible deviation in level of gullies: +0 to -10mm.

64 PLASTICS INSPECTION CHAMBERS

- Standard: To BS EN 13598-1, BS EN 13598-2 or Agrément certified.
- Manufacturer: Contractor's choice .
  - Product reference: Submit proposals .
- Bedding: 100 mm in situ concrete .
- Surround: In situ concrete, thickness (minimum) 150 mm .
- Backfilling: Granular material to 100 mm above crown of pipes, then selected as dug material
- Concrete collar: Not required .
- Access covers and seating: Steel .

419 GREASE TRAPS

- Standards: In accordance with BS EN 1825-1 and to BS EN 1825-2 and Kitemark certified, or Agrément certified.
- Manufacturer: Kingspan Klargestar
  - Product reference: 1.2m dia NSG 06 Grease Separator
- Capacity: 3000l
- Location: See drawings
- Inlet pipe size: 160mm dia
- Outlet pipe size: 160mm dia
- Installation: Fully in accordance with manufacturers guidance – See appendix B and C
- Accessories: Alarm – Contractor to allow for contractor design power supply and visual /audible alarm within kitchen.



**Z10 PURPOSE MADE JOINERY**

To be read with Preliminaries/General conditions.

**110 FABRICATION GENERALLY:**

- Fabricate joinery components to BS 1186: Part 2.
- Form sections out of the solid when not specified otherwise. Carefully machine timber to accurate lengths and profiles. After machining, sections to be free from twist and bowing, and surfaces to be smooth and free from tearing, wooliness, chip bruising and other machining defects.
- Assemble with tight, close fitting joints to produce rigid components free from distortion.
- All screws to have pilot holes. Screws of 8 gauge or more and all screws into hardwood to have clearance holes. Screw heads to be countersunk not less than 2 mm below timber surfaces that will be visible in completed work.

**120 CROSS SECTION DIMENSIONS OF TIMBER:**

- Dimensions on drawings are finished sizes.
- Maximum permitted deviations from finished sizes for softwood sections to be as stated in BS EN 1313: Part 1:  
Clause 6 for sawn sections  
Clause NA. 2 for further processed sections.
- Maximum permitted deviations from finished sizes for hardwood sections to be as stated in BS 5450:  
Clause 6.1 for sawn sections  
Clause 8.3 for further processed sections.

**130 PRESERVATIVE TREATED TIMBER:**

- Carry out as much cutting and machining as possible before treatment.
- Retreat all timber which is sawn along the length, ploughed, thickened, planed or otherwise extensively processed.
- Treat surfaces exposed by minor cutting and drilling with two flood coats of a solution recommended for the purpose by main treatment solution manufacturer.

**140 MOISTURE CONTENT** of timber and wood based boards to be maintained within the range specified for the component during manufacture and storage.

**250 FINISHING AND PROTECTING:**

- Sand all joinery to give smooth, flat surfaces suitable to receive specified finishes. Arises to be eased unless specified otherwise.
- Before assembly, seal all end grains for external components with primer or sealer as specified in section M60 and allow to dry.
- Protect completed joinery against damage, dirt, moisture and other deleterious substances.

**Z11 PURPOSE MADE METALWORK**

To be read with Preliminaries/ General Conditions.

110 MATERIALS GENERALLY

- Grades of metals, section dimensions and properties: To the appropriate British Standard and suitable for the purpose.
- Prefinished metal: May be used if methods of fabrication do not damage or alter appearance of finish, and finish is adequately protected.
- Fasteners: To appropriate British Standard and, unless specified otherwise, of same metal as component, with matching coating or finish.

120 FABRICATION GENERALLY

- Contact between dissimilar metals in components that are to be fixed where moisture may be present or occur: Avoid.
- Finished components: Rigid and free from distortion, cracks, burrs and sharp arrises.
  - Moving parts: Free moving without binding.

Corner junctions of identical sections: Mitred unless specified otherwise.

130 COLD FORMED WORK

- Profiles: Accurate, with straight arrises.

170 WELDING/ BRAZING GENERALLY

- Surfaces to be joined: Thoroughly cleaned.
- Tack welds: Use only for temporary attachment.
- Joints: Made with parent and filler metal fully bonded throughout with no inclusions, holes, porosity or cracks.
- Surfaces of materials that will be self-finished and visible in completed work: Protect from weld spatter.
- Traces of flux residue, slag and weld spatter: Removed.

180 WELDING OF STEEL

- Preferred method: Metal arc welding to BS EN 1011-1 and -2.
  - Alternative methods: Submit proposals.

250 FINISHING WELDED/ BRAZED JOINTS VISIBLE IN COMPLETED WORK

- Butt joints: Smooth, and flush with adjacent surfaces.
- Fillet joints: Neatly executed and ground smooth where specified.

310 PREPARATION FOR APPLICATION OF COATINGS

- General: Fabrication complete, and fixing holes drilled before applying coatings.
- Paint, grease, flux, rust, burrs and sharp arrises: Removed.

360 GALVANIZING

- Standard: To BS EN ISO 1461.
- Vent and drain holes: Provide in approved locations and seal to approval after galvanizing.

380 ANODIZING

- Standards:
  - Internal applications: To BS EN 12373-1.
  - External applications: To BS 3987 or BS EN 12373-1.
- Certificate of compliance: Submit.

**Z20 FIXINGS/ADHESIVES**

To be read with Preliminaries/General conditions.

- 110 FIXING GENERALLY: Use fixing and jointing methods and types, sizes, quantities and spacings of fasteners which are suitable having regard to:
- Nature of and compatibility with product/material being fixed and fixed to,
  - Recommendations of manufacturers of fasteners and manufacturers of components, products or materials being fixed and fixed to,
  - Materials and loads to be supported,
  - Conditions expected in use,
  - Appearance, this being subject to approval.
- 130 FASTENERS for materials and components:
- Forming part of external construction but not directly exposed to the weather to be of corrosion resistant material or have a corrosion resistant finish.
  - Directly exposed to the weather to be of corrosion resistant material.
- 140 FIXING THROUGH FINISHES: Ensure that fasteners and plugs (if used) have ample penetration into the backing.
- 150 PACKINGS:
- Provide suitable, tight packings at fixing points to take up tolerances and prevent distortion.
  - Use non-compressible, rot proof, non-corrodible materials positioned adjacent to fixing points.
  - Ensure that packings do not intrude into zones that are to be filled with sealant.
- 160 CRAMP FIXING:
- When not specified otherwise, position cramps not more than 150 mm from each end of frame sections and at 600 mm maximum centres.
  - Secure cramps to frames with matching screws as masonry work proceeds, and fully bed in mortar.
- 230 PELLETING: Countersink screw heads 6 mm below timber surface and glue in grain-matched pellets not less than 6 mm thick, cut from matching timber. Pellets to occupy the whole depth of the holes and be finished off flush with surface.
- 250 POWDER ACTUATED FIXING SYSTEMS:
- Do not use without approval.
  - Tools to be to BS 4078:Part 2 and Kitemark certified, and used in accordance with BS 4078:Part 1. Operatives to be trained and certified as competent by tool manufacturer.
  - Fasteners, accessories and consumables to be types recommended by the tool manufacturer.
  - Ensure that operatives take full precautions against injury to themselves and others.
  - Remove all unspent cartridges from the site when no longer required.
  - Apply zinc rich primer to heads of fasteners used externally, in external walls or in other locations subject to dampness.
  - Use top hat section plastics washers to isolate cartridge fired nails from stainless steel components fixed externally, in external walls or in other locations subject to dampness.
- 290 VOC CRITERIA  
European standard - To bs en 13999-1:2007  
Emission level required - verify that carcinogenic or sensitising volatile substances are absent
- 510 ADHESIVES:
- Adhesive types: As specified in the relevant section.
  - Surfaces to receive adhesive to be sound, unfrozen, free from dust, grease and any other contamination likely to affect bond. Where necessary, clean surfaces using methods and materials recommended by adhesive manufacturer.

- Adjust surface regularity and texture as necessary to suit bonding and gap filling characteristics of adhesive.
- Ensure that operatives observe manufacturers and statutory requirements for storage and safe usage of adhesives.
- Do not use adhesives in unsuitable environmental conditions or beyond the storage period recommended by the manufacturer.
- Apply adhesives using recommended spreaders/applicators to ensure correct coverage. Bring surfaces together within recommended time period and apply pressure evenly over full area of contact to ensure full bonding.
- Remove surplus adhesive using methods and materials recommended by adhesive manufacturer and without damaging surfaces.

**Z21 MORTARS**

To be read with Preliminaries/General conditions.

- 110 MORTAR MIX PROPORTIONS and other particular requirements are specified elsewhere.
- 120 SAND FOR MORTAR:
- To BS 1200 unless specified otherwise.
  - Sand for facework mortar to be from one source, different loads to be mixed if necessary to ensure consistency of colour and texture.
  - When a range is specified (e.g. 1:1:5-6) use lower proportion of sand for Grade G sands and higher proportion for Grade S.
- 131 READY-MIXED LIME: SAND:
- Unless specified otherwise, use ready-mixed lime-sand to BS 4721.
  - Coloured mortar, where required, to be made using a proprietary coloured ready-mixed lime-sand, colour to approval where not specified.
- 135 SITE PREPARED LIME: SAND MIX:
- Use lime putty to BS 890, either ready prepared from quicklime or site prepared
  - Thoroughly mix lime putty with sand, store in airtight bins and prevent from drying out.
  - Before gauging with other constituents, thoroughly ram, beat and chop the mix.
- 140 PUTTY PREPARED FROM SLAKED QUICKLIME:
- Ensure that operatives are experienced in the safe handling and slaking of quicklime and are thoroughly protected against contact with it.
  - Use fresh quicklime to BS 890 and store in cool, dry and secure non-combustible containers.
  - Slake quicklime in suitable sound metal tanks. Add quicklime to clean water whilst stirring and raking continuously. Do not add water to quicklime.
  - Sieve putty to remove any lumps and run into a suitable storage tank or lined pit. Cover the putty with water and store for at least six weeks. Prevent access with a strong, well secured cover over the tank or pit.
- 145 PUTTY PREPARED FROM HYDRATED LIME:
- Mix fresh hydrated lime to BS 890 with clean water to form a putty of creamy consistency.
  - Store putty in airtight containers for not less than 24 hours before using.
- 150 HYDRAULIC LIME: SAND MORTAR:
- Thoroughly mix eminently hydraulic hydrated lime powder with sand, first in the dry state and then with water. Add only sufficient water to produce a workable mix.
  - Do not use mortar which has begun to stiffen.
- 160 CEMENT FOR MORTAR: When not specified otherwise, to be Portland cement or Portland blastfurnace cement, to class 42.5 or 52.5, manufactured and supplied under the BSI Kitemark scheme for cement. All cements must comply with the appropriate British Standard.
- 180 ADMIXTURES: Do not use in mortar unless specified or approved. Do not use calcium chloride or any admixtures containing calcium chloride. Admixtures, if specified, to be to BS 4887.
- 200 SITE STORAGE:
- Store different sands and aggregates in different stockpiles on hard clean bases which allow free drainage.
  - Store factory produced premixed lime-sand for mortars and ready-to-use retarded mortars in covered containers to prevent excessive drying out or wetting.
  - Store bags of cement and hydrated lime in dry conditions, raised off the ground and not touching damp surfaces. Do not use cement or hydrated lime affected by damp.
  - Avoid intermixing and contamination between stored materials and other building materials, debris or other deleterious matter.

210 MAKING MORTAR:

- Keep plant and banker boards clean at all times.
- Measure materials accurately by volume using clean gauge boxes. Proportions of mixes are for dry sand; allow for bulking if sand is damp.
- Mix ingredients thoroughly to a consistence suitable for the work and free from lumps. Mortars containing air entraining admixtures must be mixed by machine, but do not overmix.
- Do not mix mortar when the air temperature is at or below 3 deg C and falling or below 1degC and rising.
- Use mortar within about two hours of mixing at normal temperatures. Use retarded mortar within the time and site temperatures recommended by the manufacturer. Mortar may be re-tempered to restore workability, but only within these time limits.

**Z22 SEALANTS**

To be read with Preliminaries/General conditions

**110 SEALANT TYPES: As specified in the relevant section.**

120 SUITABILITY OF JOINTS: Before commencing, check that:

- Joint dimensions are within limits specified for the sealant.
  - Surfaces are smooth and undamaged.
  - Preparatory work which must be done before assembly of the joint has been carried out
- Inform CA if joints are not suitable to receive sealant and submit proposals for rectification

130 PREPARING JOINTS:

- Clean surfaces to which sealant must adhere using methods and materials recommended by sealant manufacturer.
- Remove all temporary coatings, tapes, loosely adhering material, dust, oil, grease and other contaminants which may affect bond.
- Keep joints clean and protect from damage until sealant is applied.
- Backing strip, bond breaker, primer: Types recommended for the purpose by sealant manufacturer.
- Insert backing strips and/or bond breaker tape into joint leaving no gaps.
- Cover adjacent surfaces with masking tape to prevent staining and protect surfaces which would be difficult to clean if smeared with primer or sealant.

160 APPLYING SEALANTS:

- Ensure that operatives observe manufacturers and statutory requirements for storage and safe usage of sealants.
- Use equipment and methods recommended by sealant manufacturer and apply within the recommended application life of primer and sealant, and the recommended air and substrate temperature ranges.
- Do not apply to damp surfaces (unless recommended otherwise), to surfaces affected by ice or snow or during inclement weather. Do not heat joints to dry them or raise the temperature.
- Fill joints completely, leaving no gaps, excluding all air and ensuring firm adhesion of sealant to required joint surfaces. Tool the sealant to a neat, slightly concave profile unless specified otherwise.
- Protect until cured.

## Z31 POWDER COATINGS

To be read with Preliminaries/ General Conditions.

### 120 POWDER COATING MATERIALS

- Manufacturer: Contractors Choice.
- Selected manufacturer: Submit details before commencement of powder coating including:
  - Name and contact details.
  - Details of accreditation schemes.
  - Technical data of product including current Agrément certificates.

### 210 WORKING PROCEDURES

- Comply with the follow following standards.
  - Aluminium components: To BS 6496 or BS EN 12206-1.
  - Steel components: To BS EN 13438.
  - Safety standards: To British Coatings Federation 'Code of safe practice - Application of thermosetting powder coatings by electrostatic spraying'.

### 220 POWDER COATING APPLICATORS

- Applicator requirements:
  - Approved by powder coating manufacturer.
  - Currently certified to BS EN ISO 9001.
  - Comply with quality procedures, guarantee conditions, standards and tests required by powder coating manufacturer.
  - Applicator to use only one plant.
  - Selected applicator: Submit details before commencement of powder coating including:
    - Name and contact details.
    - Details of accreditation schemes.

### 225 GUARANTEES

- Powder coating manufacturer and applicator guarantees:
  - Submit sample copies before commencement of powder coating.
  - Submit signed project specific copies on completion of work.

### 310 PRETREATMENT OF ALUMINIUM COMPONENTS

- Condition of components to be pre-treated:
  - Free from corrosion and damage.
  - All welding and jointing completed and finish off as specified.
  - Free from impurities including soil, grease, oil.
  - Suitable for and compatible with the pre-treatment process.
- Conversion coating requirements:
  - Chromate system: To BS 6496 or BS EN 12206-1.
  - Chromate-free system: To BS EN 12206-1. Submit details before using.
- Rinsing requirements: Use de-mineralized water. Drain and dry.

### 320 PRETREATMENT OF STEEL COMPONENTS

- Condition of components to be pre-treated:
  - Free from corrosion and damage.
  - All welding and jointing completed and finish off as specified.
  - Free from impurities including soil, grease, oil.
  - Suitable for and compatible with the pre-treatment process.
- Conversion coating requirements: To BS EN 13438.
- Rinsing requirements: Use de-mineralized water. Drain and dry.

### 430 EXTENT OF POWDER COATINGS

- Application: To visible component surfaces, and concealed surfaces requiring protection. Coated surfaces will be deemed 'significant surfaces' for relevant BS 6496 or BS EN 13438 performance requirements.



435 APPLICATION OF POWDER COATINGS

- Surfaces to receive powder coatings: Free from dust or powder deposits.
- Powder colours: Obtain from one batch of one manufacturer.
- Commencement of powder coatings: To be continuous from pre-treatment.
- Jig points: Not visible on coated components.
- Curing: Controlled to attain metal temperatures and hold periods recommended by powder coating manufacturer.
- Stripping and recoating of components: Only acceptable by prior agreement of powder coating manufacturer. Stripping, pre-treatment and powder coating are to be in accordance with manufacturer's requirements.
- Overcoating of components: Not acceptable.

440 PERFORMANCE AND APPEARANCE OF POWDER COATINGS

- For aluminium components:
  - Standard: To BS 6496 or BS EN 12206-1.
- For steel components:
  - Standard: To BS EN 13438.
- Visual inspection after powder coating: Significant surface viewing distances to be as specified in the relevant Standard, unless specified otherwise.
- Colour and gloss levels: To conform with approved samples.

450 ALUMINIUM ALLOY FABRICATIONS

- Units may be assembled:
  - Before powder coating.
  - From components powder coated after cutting to size.
  - Where approved, from components powder coated before cutting to size.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

460 STEEL FABRICATIONS

- Unit assembly: Wherever practical, before powder coating.
- Exposure of uncoated background metal: Not acceptable.
- Assembly sealants: Compatible with powder coatings. Obtain approval of colour if sealants are visible after fabrication.

470 FIXINGS

- Exposed metal fixings: Powder coat together with components, or coat with matching repair paint system applied in accordance with the powder coating manufacturer's recommendations.

480 DAMAGED COMPONENTS – REPAIR/ REPLACEMENT

- Before delivery to site: Check all components for damage to powder coatings. Replace damaged components.
- Site damage: Submit proposals for repair or replacement.

510 PROTECTION

- Powder coated surfaces of components: Protect from damage during handling and installation, or by subsequent site operations.
- Protective coverings: Must be:
  - Resistant to weather conditions.
  - Partially removable to suit building in and access to fixing points.
- Protective tapes in contact with powder coatings: Must be:
  - Low tack, self-adhesive and light in colour.

-Applied and removed in accordance with tape and powder coating manufacturers' recommendations. Do not use solvents to remove residues as these are detrimental to the coating.

-Inspection of protection: Carry out monthly. Promptly repair any deterioration or deficiency.

535 DOCUMENTATION

- Submit the following information for each batch of powder coated components:
  - Supplier.
  - Trade name.
  - Colour.
  - Type of powder.
  - Method of application.
  - Batch and reference number.
  - Statutory requirements.
  - Test certificates.
  - Maintenance instructions.

540 COMPLETION

- Protection: Remove
- Cleaning and maintenance of powder coatings: Carry out in accordance with procedures detailed in powder coating manufacturer and applicator guarantees.